Timeliness of Death Certificate Data for Mortality Surveillance and Provisional Estimates

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Abstract

Objective—This report evaluates the lag time between the week of death and the week when information on the death certificate became available for production of quarterly provisional estimates and mortality surveillance activities for deaths occurring from March 2015 through July 2015.

Methods—Deaths occurring in this time period were grouped by the week the death occurred (i.e., the reference week) for a total of 20 reference-week units. The analysis calculated the percentage of death certificate recor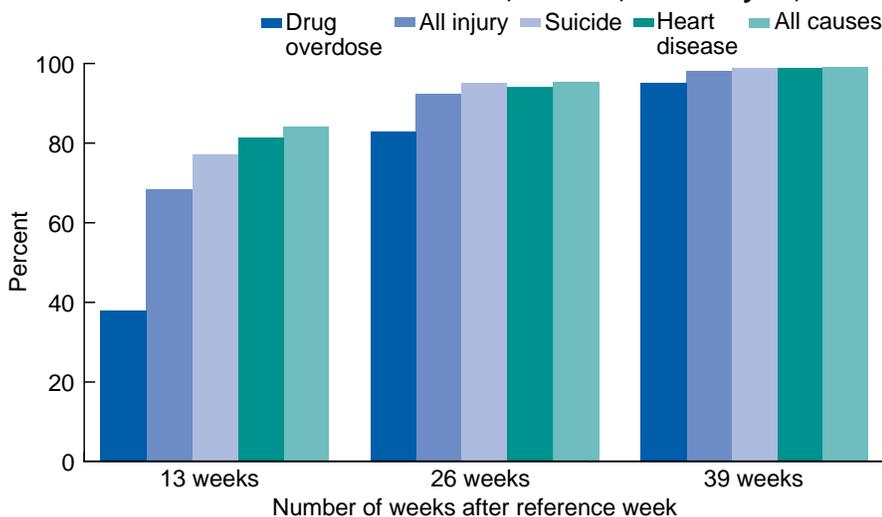ds that were available for analysis in NCHS' database for 52 subsequent weeks following each reference week. The mean percentage of death certificate records available for analysis across the 20 reference-week units at each subsequent week is reported for overall deaths, injury-related deaths, and specific causes of death including heart disease, suicide, and drug overdose.

Results—For overall deaths, on average 83.9% of death certificate records were available by 13 weeks (1 quarter), 95.2% by 26 weeks (2 quarters), and 99.1% by 39 weeks (3 quarters). For heart disease deaths, on average 81.4% were available by 13 weeks, 94.0% by 26 weeks, and 98.9% by 39 weeks. For drug overdose deaths, on average 37.8% were available by 13 weeks, 82.7% by 26 weeks, and 95.0% by 39 weeks. For suicide deaths, on average 77.0% were available by 13 weeks, 95.0% by 26 weeks, and 98.7% by 39 weeks. For all injury deaths combined, on average 68.4% were available by 13 weeks, 92.3% by 26 weeks, and 98.0% by 39 weeks.

Conclusion—Timeliness of death certificate data availability for analysis differs by cause of death. Lag times for injury-related deaths are longer than for non-injury-related deaths. The lag time between when a death occurs and when information from the certificate is available for analysis should be taken into account when conducting mortality surveillance.

Introduction

The National Center for Health Statistics (NCHS) collects and disseminates the nation's official vital statistics through the National Vital Statistics System (NVSS). NVSS refers to the inter-governmental sharing of vital records data between NCHS and state vital registration offices. Through NVSS, 57 jurisdictions, which include the 50 states, New York City, the District of Columbia, and 5 U.S. territories, send birth and death data to NCHS. Data are then processed and data sets are created through coding, validation, and other standardization processes. NCHS serves as the custodian and distributor of national vital statistics in the United States, and produces annual natality and mortality national health

Figure 1. Mean percentage of death certificate records available for analysis at 13-, 26-, and 39-week (quarterly) thresholds for selected causes of death: United States, March 1, 2015–July 17, 2016
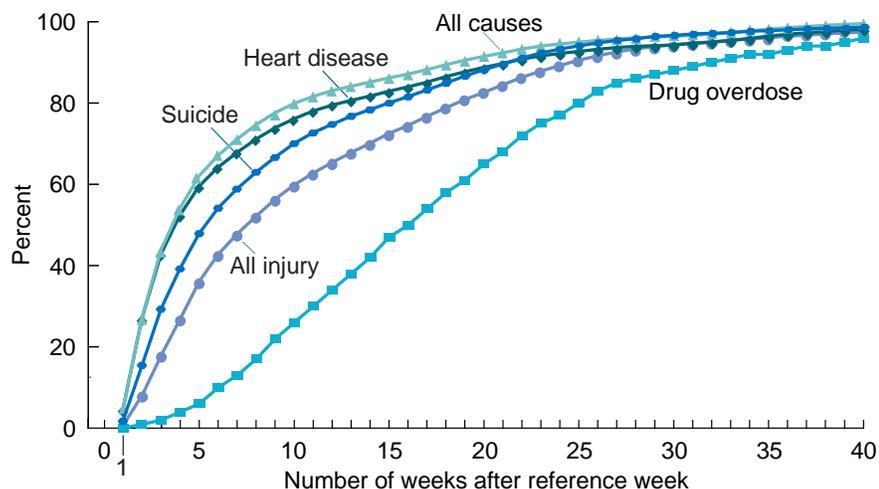

NOTES: Mean percentage refers to the sum of the percentages of available death records (i.e., all cause or cause-specific death records in a given week over all cause or cause-specific death records at 52 weeks) across the 20 reference-week units divided by the total number of reference-week units. A reference-week unit is defined as the week a set of deaths occurred.
DATA SOURCE: NCHS, National Vital Statistics System, March 1, 2015–July 17, 2016.

Figure 2. Mean percentage of death certificate records available for analysis for selected causes of death, by each week after reference week: United States, March 1, 2015–July 17, 2016

NOTES: Mean percentage refers to the sum of the percentages of available death records (i.e., all cause or cause-specific death records in a given week over all cause or cause-specific death records at 52 weeks) across the 20 reference-week units divided by the total number of reference-week units. A reference-week unit is defined as the week a set of deaths occurred.
DATA SOURCE: NCHS, National Vital Statistics System, March 1, 2015–July 17, 2016.

statistics. NCHS has also recently begun using data from NVSS in near real-time for conducting public health surveillance.

NVSS death certificate records go through several steps prior to becoming available for analysis and statistical reporting. When a death occurs, the funeral director completes the demographic component of the death certificate, and the certifying physician completes the cause and manner of death. If the death involves injuries from external or environmental forces (e.g., accident, poisoning, suicide, or homicide), a medical examiner or coroner may investigate the circumstances of the death through autopsies, forensic tests, and/or laboratory tests before certifying the cause and manner of the death. After the death certificate is completed, the state vital records office sends the record to NCHS to be coded and edited using manual and automated processes. The length of the lag time—from when the death occurs to when jurisdictions provide death certificate records to NCHS to when NCHS processes the data—is important to understand when conducting time-sensitive research, such as surveillance.

In the last several years, NCHS has initiated pilot mortality surveillance projects on influenza and pneumonia, suicide, vaccine-preventable diseases, natural disasters, and other causes. These causes of death have shown variation in timeliness that impact the use of the data for surveillance purposes. Beginning in 2015, NCHS initiated the Vital Statistics Rapid Release (VSRR) program, which provides timely vital statistics through the release of quarterly provisional estimates on important health indicators for public health practitioners, researchers, and health policymakers. As part of VSRR, NCHS may release special reports evaluating the timeliness of NVSS data. This report serves as the first report of this series.

This study examines current receipt and processing timeliness of death certificates for all causes of death, as well as for external and non-external causes of death to account for possible differences in lag time due to death investigations for injury-related deaths. The analysis includes one natural cause of death (heart disease) and two injury-related causes of death (suicide and drug overdose) based on the underlying cause of death. These

three causes of death are reported as part of VSRR's quarterly provisional estimates with different lengths of lag time—3 months for heart disease, 6 months for suicide, and 9 months for drug overdose deaths. Determining if a death is due to suicide can involve obtaining information from public officials, friends and family, acquaintances, autopsies, and other laboratory tests (1). Deaths from poisonings, such as drug overdose, require forensic toxicology analysis, which can delay the completion of a death certificate. This study examines the lag time for these causes to understand when death records are available for use in mortality surveillance.

Methods

In 2014, NCHS began taking weekly snapshots of its mortality data, capturing the underlying causes of death, dates of death, and select demographic information for all death records received from state vital records offices by each week. These snapshots enable NCHS to make static comparisons of available death records over time. Using these weekly snapshots, this report describes the timeliness of 2015 death certificate records where timeliness is defined as the average length of time between the week the death occurred and the week that the information on the certificate was available for analysis by NCHS. The lag times for obtaining death certificate records are presented for all causes of death combined, all injury-related causes of death combined, heart disease, suicide, and drug overdose in each week. Also presented are data on deaths with an unknown cause of death—coded to *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* (ICD–10) code R99 (other ill-defined and unspecified causes of mortality)—given that the cause of death for injury-related deaths pending investigation is often coded as unknown until the process is complete. For purposes of this report,

death records coded as R99 are referred to as records with unknown cause. See Technical Notes for details.

Deaths occurring from March 2015 through July 2015 were grouped by the week the death occurred (i.e., the reference week), for a total of 20 reference weeks. The percentage of death certificate records available for analysis in NCHS' database was calculated for 52 subsequent weeks following each reference week. To examine the lag time by cause of death, deaths were classified by the ICD–10 code for the underlying cause of death. Injury-related causes of death included the following ICD–10 codes: U01–U03, V01–Y36, Y85–Y87, and Y89. Heart disease deaths included the following ICD–10 codes: I00–I09, I11, I13, and I20–I51. Suicide deaths included the following ICD–10 codes: U03, X60–X84, and Y87.0. Drug overdose deaths included the following ICD–10 codes: X40–X44, X60–X64, X85, and Y10–Y14. Suicide deaths are not mutually exclusive from drug overdose deaths because some suicides may involve drug overdose. See Technical Notes for details.

For each reference-week unit, the percentage of death records available for analysis for every subsequent week was calculated by dividing the total number of available death records for each cause of death category (i.e., all causes, all injuries, or a specific cause) at each week following the unit's reference week by the total number of available death records for that cause-of-death category at the 52nd week. The total number of death certificate records received at 52 weeks is an estimation of the true number of deaths occurring in a reference week. The mean percentage of death records available for analysis across the 20 reference-week units for all causes combined, injury-related causes, heart disease, suicide, and drug overdose are reported. For instance, the mean percentage of records available to NCHS at 1 week ($_{W1}$) for all causes of death after the week a death occurred (i.e., reference week) is:

Figure 3. **Mean percentage of death certificate records available for analysis with unknown cause of death: United States, March 1, 2015–July 17, 2016**

NOTES: Mean percentage refers to the sum of the percentages of available death records with unknown cause (i.e., records with unknown causes over all cause-of-death records at each subsequent week) across the 20 reference-week units divided by the total number of reference-week units. A reference-week unit is defined as the week a set of deaths occurred. Unknown cause of death refers to records assigned the ICD–10 code R99 (other ill-defined and unspecified causes of mortality).
DATA SOURCE: NCHS, National Vital Statistics System, March 1, 2015–July 17, 2016.

$$\frac{(X_{1,W1}/X_{1,W52}) + (X_{2,W1}/X_{2,W52}) + \cdots + (X_{20,W1}/X_{20,W52})}{Total\ number\ of\ reference-week\ units}$$
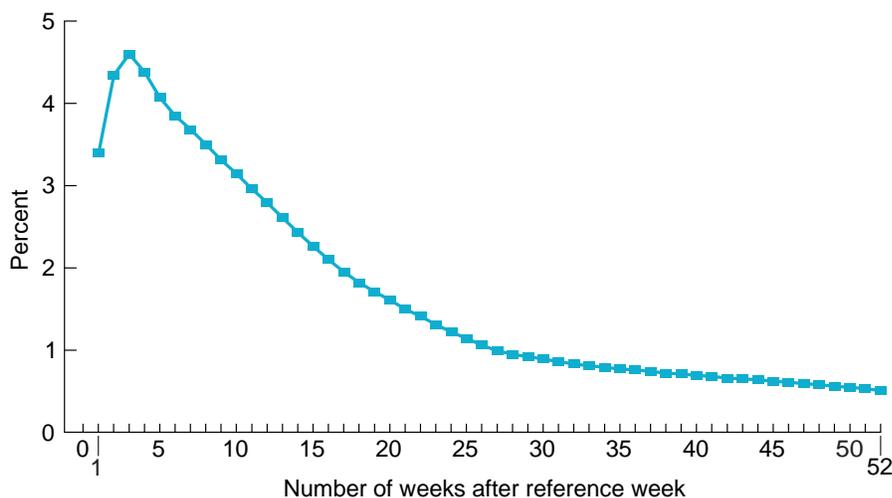
where X_n (n = 1, 2, … 20) denotes a specific reference week's number of death records counted, W_1 denotes 1 week, and W_{52} denotes 52 weeks out from the reference week. Mean percentages for all injuries combined, heart disease, suicide, and drug overdose were calculated using the same methods.

The mean percentage of records with unknown cause at each subsequent week was calculated differently. The denominator was the average of the 20 reference-week units' total available death records (all causes) at each week following the reference week, rather than the number of records with unknown cause at 52 weeks. For example, the mean percentage of records with unknown cause available to NCHS at 1 week ($_{W1}$) after the week a death occurred (i.e., reference week) is:

$$\frac{(Y_{1,W1}/Z_{1,W1}) + (Y_{2,W1}/Z_{2,W1}) + \cdots + (Y_{20,W1}/Z_{20,W1})}{Total\ number\ of\ reference-week\ units}$$

where Y_n (n = 1, 2, …20) denotes a specific reference week's number of available unknown records at 1 week,

Z_n (n = 1,2,…20) denotes the average number of all available death records at 1 week, and W_1 denotes 1 week out from the reference week. The mean percentages were reported in this manner because some unknown records are expected to be revised with an updated cause of death after initial reporting, and therefore would be best analyzed as a comparison to the average total of all available deaths each week. For comparative purposes, the mean percentages for heart disease and injury-related deaths were also calculated using this approach.

Results

The mean percentages death records available for analysis are reported at 13-week, 26-week, and 39-week thresholds to align with NCHS' quarterly provisional estimates of mortality (Figure 1, Table 1). Figure 2 describes the mean percentages of death records available for analysis by week. As shown in Table 1 and Figure 1, across all causes of death, on average 83.9% of death records were available for analysis by 13 weeks (1 quarter), 95.2% by 26 weeks (2 quarters), and 99.1% by 39 weeks (3

quarters). For heart disease deaths, on average 81.4% were available by 13 weeks, 94.0% by 26 weeks, and 98.9% by 39 weeks. For drug overdose deaths, on average 37.8% were available by 13 weeks, 82.7% by 26 weeks, and 95.0% by 39 weeks. For suicide deaths, on average 77.0% were available by 13 weeks, 95.0% by 26 weeks, and 98.7% by 39 weeks. For all injury-related deaths combined, on average 68.4% of death records were available by 13 weeks, 92.3% by 26 weeks, and 98.0% by 39 weeks.

The mean percentages of death records available for analysis with causes of death listed as unknown, heart disease, and any injury for weeks following the reference weeks are shown in Figures 3 and 4. The mean percentage of death records with unknown cause peaked at 3 weeks (4.6%) and gradually decreased over time so that by 52 weeks, the percentage was reduced to 0.5% (Figure 3). This trend differs from available heart disease death records. The mean percentage for heart disease death records available for analysis was stable over time from 23.8% by 1 week to 23.4% by 52 weeks (Figure 4). In contrast, the mean percentage of

death records with all injury-related causes of death available for analysis increased over time from 1.7% at 1 week to 7.9% by 52 weeks (Figure 4).

Discussion

The timeliness with which information from death records for deaths due to heart disease is available for analysis was similar to the timeliness observed for all causes of death. In contrast, death certificate records for injury-related deaths had longer lag times compared with death certificate records for all causes of death.

Availability of death certificate records for injury-related deaths varied across select injury categories. Death certificate records for suicides had less lag time than those for all injury-related deaths combined, while death certificate records for drug overdose deaths had longer lag times than those for all injury-related deaths combined.
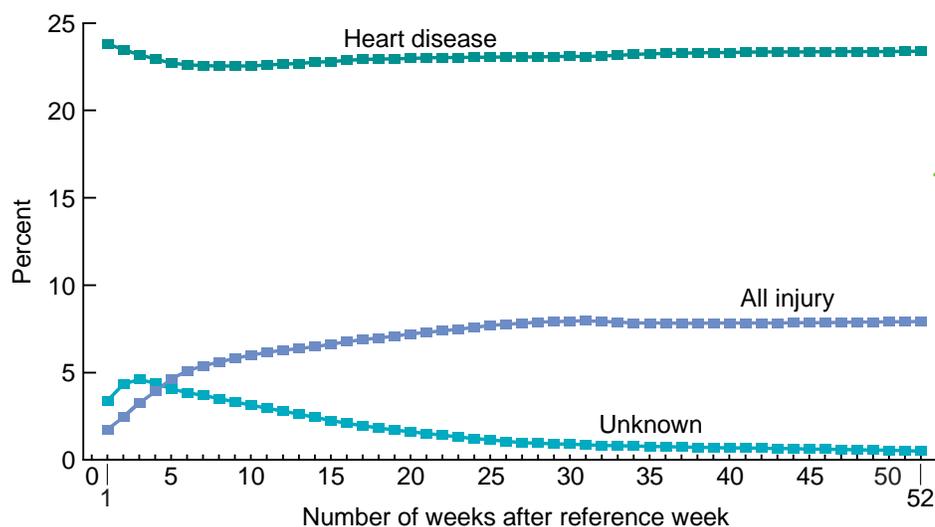
Findings from this study are consistent with the hypothesis that lag time for available death certificate records is longer for deaths that

require investigation (i.e., injury-related causes of death). The decrease in the percentage of death records with unknown cause from 5% at 3 weeks to 0.5% by 52 weeks (Figure 3) indicates that records with unknown cause are being updated over time with more specific cause-of-death information. Further, the increasing mean percentage of injury-related deaths each week after the reference week suggests that records with unknown causes are shifting to injury-related causes of death, as opposed to natural causes of death such as heart disease, which maintained stable mean percentages over time.

This study has some limitations. The weekly snapshots of the data did not capture unique identifiers assigned to individual death records and therefore, only the overall frequencies counted in each snapshot are reported. Without unique identifiers, it was impossible to discern which specific death records were updated and/or changed to different cause-of-death codes at later points in time. In addition, the total number of death certificate records received at 52 weeks is an estimation of the true number of deaths occurring in a reference week in 2015. It is possible that for some of the cause-of-death categories, such as deaths from drug overdose, it may take more than 1 year to investigate the cause of death and finalize the death certificate, and therefore the true total number of deaths for such categories may be undercounted.

Despite these limitations, this study created baseline estimations for the timeliness of various cause-of-death categories and provides an overview of the timeliness for the number of records received and processed by NCHS. Having these baseline estimates can provide insight into how much time is required to generate reasonable estimates for surveillance activities, such as NCHS' quarterly provisional estimates.

Figure 4. Mean percentage of death certificate records available for analysis with selected causes of death: United States, March 1, 2015–July 17, 2016

NOTES: Mean percentage refers to the sum of the percentages of available unknown or cause-specific death records (i.e., death records of an unknown or a specific cause over all cause-of-death records at each subsequent week) across the 20 reference-week units divided by the total number of reference-week units. A reference-week unit is defined as the week a set of deaths occurred. Unknown cause of death refers to records assigned the ICD–10 code R99 (other ill-defined and unspecified causes of mortality).
DATA SOURCE: NCHS, National Vital Statistics System, March 1, 2015–July 17, 2016.

References

1. National Center for Health Statistics. Underlying cause of death 1999–2014. Data from the multiple cause-of-death files, 1999–2014. CDC WONDER online database. 2015.

2. Hanzlick R, Hunsaker III JC, Davis GJ. A guide for manner of death classification. 1st edition. Atlanta, GA: National Association of Medical Examiners. 2002.

3. WHO. International statistical classification of diseases and related health problems, tenth revision (ICD–10). 2nd ed. Geneva, Switzerland. 2004.

4. National Center for Health Statistics. Instruction manual, part 2a: Instructions for classifying the underlying cause of death, 2016. Hyattsville, MD. Available from: http://www.cdc.gov/nchs/data/dvs /2a_2016.pdf.

Technical Notes

Definitions

- **Reference week** is considered to be the week a decedent died, as indicated on his or her death certificate. Saturday is considered the end of the week, and therefore deaths occurring from Sunday through Saturday determine reference week assignments.

- **Natural causes of death** follows the National Association of Medical Examiners' distinction whereby natural deaths are "due solely or nearly totally to disease and/or the aging process" (3).

- **Injury-related causes of death** are classified as environmental events or circumstances in which the cause of injury, poisoning, or other adverse effect is considered to be the underlying cause. For purposes of this report, injury-related causes of death is also referred to as external causes of

death. Injury-related causes of death included the following *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD–10) codes: U01–U03, V01–Y36, Y85–Y87, and Y89.

- **Pending records** are death records for which the manner of death has yet to be determined. Medical examiners or coroners must determine whether a death was natural, an accident or intentional, and this may include his or her own investigation, staff investigations, police reports, and/or discussions with the family and friends of the decedent. Pending records may be temporarily assigned the ICD–10 code R99 (other ill-defined and unspecified causes of mortality) in the National Center for Health Statistics' (NCHS) data during the investigation process. These records are later updated with a cause of death after the medical examiner or coroner completes the investigation. NCHS considers records that are never assigned the true cause of death as "unknown" at the close of a yearly mortality file.

- **Records with unknown cause** of **death** are also assigned the ICD–10 code R99 (other ill-defined and unspecified causes of mortality) and may be considered as deaths that there was "no more compelling [manner of death] than one or more competing manners of death" (2).

Nature and source(s) of data

Provisional weekly snapshots

In 2014, NCHS began taking weekly snapshots of its mortality data, which include death certificate records from the 50 states, New York City, and the District of Columbia. The following data fields have been collected at the start of each week with a 2-year review period—Hispanic origin, age group, sex, date of death (month, day, and year), underlying

cause of death, decedent's state and county of residence, state and county in which the death occurred, and contributing causes of death (i.e., record axis codes).

During the study period (March 2015 through July 2016), the NCHS system was unable to capture three snapshots that occurred on October 4, October 11, and October 18, 2015. This affected the reference-week units' percentage of death records that were available for analysis at different time points, because the number of weeks out would differ based on when the death week occurred. If a reference-week unit's percentage of death certificate records that were available for analysis could not be determined for a particular week, the value was treated as missing, and thus, the weekly mean percentage of records available for analysis was calculated using the remaining percentages of available death records. Records that did not provide a specific date of death were not analyzed because these could not be assigned to a specific reference week. Records for which data could not be reconciled, such as records stating that NCHS received them before when the death occurred, were not included.

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* (3). Causes of death are coded according to ICD guidelines described in annual issues of Part 2a of the NCHS Instruction Manual (4). For purposes of our study, we focused entirely on the underlying cause-of-death ICD–10 codes. Injury-related causes of death included the following ICD–10 codes: U01–U03, V01–Y36, Y85–Y87, and Y89. Heart disease deaths were defined using the following ICD–10 codes: I00–I09, I11, I13, and I20–I51. Suicide deaths were defined using the following

ICD–10 codes: U03, X60–X84, and Y87.0. Drug overdose deaths were defined using the following ICD–10 codes: X40–X44, X60–X64, X85, Y10–Y14. Deaths with unknown cause were assigned the ICD–10 code R99. Data on cause of death are subject to some nonrandom sampling error. This is because the delay in receiving the report of a death depends on the cause of death. Furthermore, for some deaths, the final cause may not be available at the time that the death was reported. In those cases, the cause of death may be reported as unknown or pending investigation and coded to ICD–10 code R99 (other ill-defined and unspecified causes of mortality). In the final data, some of the deaths with unknown cause will be reassigned to specific causes if further, more specific cause-of-death information is provided.

Suggested Citation

Spencer MR, Ahmad F. Timeliness of death certificate data for mortality surveillance and provisional estimates. National Center for Health Statistics. January 2017. Available from: https://www.cdc.gov/nchs/data/vsrr/report001.pdf.

Table 1. Mean percentage of death certificate records available for analysis, by each week after reference week for selected causes of deaths: United States, March 1, 2015–July 17, 2016

Number of weeks out	All causes of death	All injury-related deaths	Heart disease	Drug overdose	Suicide
		Percent (standard error)			
1	4.8 (0.24)	1.1 (0.07)	4.9 (0.25)	0.1 (0.02)	2.0 (0.16)
2	27.2 (0.51)	8.5 (0.26)	27.3 (0.55)	0.8 (0.08)	15.7 (0.41)
3	43.8 (0.62)	18.3 (0.95)	43.4 (0.49)	2.0 (0.17)	29.6 (0.82)
4	54.1 (0.64)	27.3 (1.36)	53.0 (0.42)	3.8 (0.24)	39.5 (1.06)
5	61.9 (0.35)	36.5 (0.80)	60.2 (0.31)	6.4 (0.26)	48.1 (0.58)
6	67.0 (0.40)	43.2 (0.42)	64.8 (0.43)	9.7 (0.34)	54.4 (0.47)
7	71.0 (0.54)	48.3 (0.34)	68.5 (0.54)	13.2 (0.42)	59.1 (0.54)
8	74.5 (0.60)	52.7 (0.37)	71.8 (0.59)	17.2 (0.43)	63.2 (0.6)
9	77.4 (0.52)	56.9 (0.41)	74.6 (0.49)	21.7 (0.41)	67.0 (0.57)
10	79.7 (0.46)	60.4 (0.39)	76.9 (0.46)	26.0 (0.43)	70.3 (0.52)
11	81.4 (0.46)	63.4 (0.42)	78.7 (0.47)	30.1 (0.49)	73.0 (0.50)
12	82.8 (0.42)	66.0 (0.43)	80.2 (0.43)	34.0 (0.46)	75.0 (0.54)
13	83.9 (0.40)	68.4 (0.5)	81.4 (0.42)	37.8 (0.62)	77.0 (0.53)
14	84.9 (0.37)	70.7 (0.57)	82.5 (0.39)	42.2 (0.72)	78.6 (0.53)
15	86.0 (0.33)	73.1 (0.63)	83.7 (0.38)	46.5 (0.99)	80.3 (0.57)
16	86.9 (0.30)	75.1 (0.60)	84.7 (0.37)	50.2 (1.05)	81.8 (0.58)
17	88.0 (0.34)	77.3 (0.66)	86.0 (0.42)	54.3 (1.24)	83.5 (0.57)
18	89.3 (0.35)	79.5 (0.72)	87.3 (0.43)	57.8 (1.24)	85.1 (0.57)
19	90.3 (0.37)	81.5 (0.76)	88.5 (0.44)	61.4 (1.27)	86.9 (0.62)
20	91.3 (0.38)	83.3 (0.74)	89.6 (0.44)	64.5 (1.28)	88.4 (0.59)
21	92.2 (0.36)	85.1 (0.77)	90.6 (0.42)	68.3 (1.36)	89.9 (0.65)
22	93.1 (0.35)	87.0 (0.76)	91.6 (0.41)	71.6 (1.31)	91.3 (0.64)
23	93.8 (0.31)	88.5 (0.67)	92.4 (0.37)	74.6 (1.19)	92.6 (0.56)
24	94.3 (0.30)	89.9 (0.60)	93.0 (0.35)	77.4 (1.10)	93.5 (0.50)
25	94.8 (0.28)	91.2 (0.55)	93.5 (0.33)	80.2 (1.03)	94.3 (0.46)
26	95.2 (0.24)	92.3 (0.47)	94.0 (0.28)	82.7 (0.95)	95.0 (0.40)
27	95.5 (0.18)	93.3 (0.36)	94.5 (0.18)	84.7 (0.76)	95.7 (0.30)
28	95.8 (0.14)	94.0 (0.30)	94.8 (0.14)	86.3 (0.60)	96.1 (0.31)
29	96.0 (0.11)	94.6 (0.24)	94.9 (0.12)	87.5 (0.52)	96.6 (0.27)
30	96.2 (0.10)	95.0 (0.21)	95.2 (0.12)	88.4 (0.5)	96.9 (0.24)
31	96.4 (0.13)	95.4 (0.16)	95.5 (0.16)	89.2 (0.45)	97.2 (0.21)
32	96.7 (0.17)	95.8 (0.13)	95.9 (0.2)	90.1 (0.38)	97.4 (0.20)
33	97.1 (0.18)	96.2 (0.12)	96.3 (0.23)	91.0 (0.33)	97.6 (0.17)
34	97.5 (0.17)	96.5 (0.10)	96.8 (0.21)	91.8 (0.32)	97.8 (0.15)
35	97.9 (0.15)	96.8 (0.09)	97.3 (0.19)	92.4 (0.27)	98.0 (0.15)
36	98.3 (0.14)	97.1 (0.09)	97.8 (0.17)	93.1 (0.26)	98.3 (0.15)
37	98.6 (0.12)	97.4 (0.09)	98.2 (0.15)	93.8 (0.25)	98.5 (0.12)
38	98.9 (0.11)	97.7 (0.09)	98.5 (0.13)	94.4 (0.28)	98.6 (0.15)
39	99.1 (0.10)	98.0 (0.1)	98.8 (0.11)	95.0 (0.28)	98.7 (0.14)
40	99.3 (0.09)	98.2 (0.09)	99.0 (0.10)	95.5 (0.28)	98.9 (0.13)
41	99.5 (0.07)	98.4 (0.10)	99.3 (0.08)	96.0 (0.30)	99.0 (0.11)
42	99.6 (0.05)	98.6 (0.10)	99.5 (0.05)	96.4 (0.32)	99.0 (0.11)
43	99.7 (0.04)	98.8 (0.12)	99.6 (0.04)	96.8 (0.35)	99.1 (0.13)
44	99.8 (0.03)	98.9 (0.12)	99.7 (0.03)	97.1 (0.36)	99.2 (0.11)
45	99.9 (0.02)	99.1 (0.11)	99.8 (0.02)	97.5 (0.35)	99.3 (0.11)
46	99.9 (0.02)	99.2 (0.11)	99.8 (0.02)	97.8 (0.35)	99.4 (0.11)
47	99.9 (0.02)	99.3 (0.11)	99.9 (0.02)	98.2 (0.33)	99.5 (0.09)
48	100.0 (0.01)	99.5 (0.08)	99.9 (0.02)	98.5 (0.25)	99.6 (0.08)
49	100.0 (0.01)	99.6 (0.08)	99.9 (0.02)	98.8 (0.24)	99.7 (0.08)

Table 1. Mean percentage of death certificate records available for analysis, by each week after reference week for selected causes of deaths: United States, March 1, 2015–July 17, 2016

Number of weeks out	All causes of death	All injury-related deaths	Heart disease	Drug overdose	Suicide
		Percent (standard error)			
50	100.0 (0.01)	99.7 (0.07)	99.9 (0.01)	99.2 (0.21)	99.8 (0.07)
51	100.0 (0.01)	99.9 (0.05)	100.0 (0.01)	99.6 (0.13)	99.9 (0.05)
52	100.0 (0.00)	100.0 (0.00)	100.0 (0.00)	100.0 (0.00)	100.0 (0.00)

NOTES: Mean percentage refers to the sum of the percentages of available death records (i.e. all cause or cause-specific death records in a given week over all cause or cause-specific death records at 52 weeks) across the 20 reference week-units divided by the total number of reference week-units. A reference week-unit is defined as the week a set of deaths occurred.

DATA SOURCE: NCHS, National Vital Statistics System, March 2015–July 2015.