

# COVID-19 Death Certification

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# Financial Disclosures

(Anderson and Nashelsky)

- None

# Outline

- Describe Parts I and II
- Discuss the concept of confidence in death certification
- Describe certification for COVID-19 deaths
- Present national and Iowa data for COVID-19 mortality and excess deaths

## Cause of Death

Underlying Cause should identify the disease that initiated the sequence of events that resulted in death.

Immediate Cause (Final disease or condition resulting in Death; may include Underlying Cause)

Due to or as a Consequence of (click query and verify on pop-up if none)

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Underlying Cause (click query and verify on pop-up if included in Immediate Cause above)

## Cause of Death Part II

Other Significant Conditions Contributing to Death (if any)

### Cause of Death

Underlying Cause should identify the disease that initiated the sequence of events that resulted in death.

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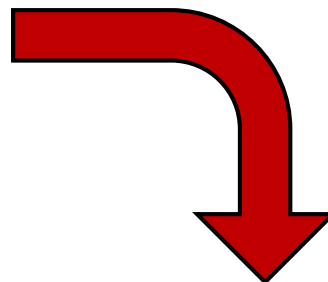
Due to or as a Consequence of (click query and verify on pop-up if none)

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Underlying Cause (click query and verify on pop-up if included in Immediate Cause above)

### Cause of Death Part II

Other Significant Conditions Contributing to Death (if any)



COVID-19

Rank <sup>1</sup>	Cause of death (ICD-10)	Number	Percent of total deaths, 2017
...	All causes.....	2,813,503	100.0
1	Diseases of heart..... (I00-I09,I11,I13,I20-I51)	647,457	23.0
2	Malignant neoplasms..... (C00-C97)	599,108	21.3
3	Accidents (unintentional injuries)..... (V01-X59,Y85-Y86)	169,936	6.0
4	Chronic lower respiratory diseases..... (J40-J47)	160,201	5.7
5	Cerebrovascular diseases..... (I60-I69)	146,383	5.2
6	Alzheimer disease..... (G30)	121,404	4.3
7	Diabetes mellitus..... (E10-E14)	83,564	3.0
8	Influenza and pneumonia..... (J09-J18)	55,672	2.0
9	Nephritis, nephrotic syndrome and nephrosis..... (N00-N07, N17-N19,N25-N27)	50,633	1.8
10	Intentional self-harm (suicide)..... (*U03,X60-X84,Y87.0)	47,173	1.7
11	Chronic liver disease and cirrhosis..... (K70,K73-K74)	41,743	1.5
12	Septicemia..... (A40-A41)	40,922	1.5
13	Essential hypertension and hypertensive renal disease..... (I10,I12,I15)	35,316	1.3
14	Parkinson disease..... (G20-G21)	31,963	1.1
15	Pneumonitis due to solids and liquids..... (J69)	20,108	0.7
...	All other causes..... (residual)	561,920	20.0

# Prime Directive

(adapted from Swain G. Am Fam Physician 2005)

- Must state the underlying cause of death.
  - The “fundamental, original, foundational diagnosis” (the disease or injury) ...
  - that initiates a “chain of causation” ...
  - that results in death.

Rank <sup>1</sup>	Cause of death (ICD-10)	Number	Percent of total deaths, 2017
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...	All other causes..... (residual)	561,920	20.0

# Prime Directive (cont.)

## These are underlying CODs:

- Atherosclerotic heart disease
- Squamous cell carcinoma of the right lung lower lobe
- Diabetes mellitus
- Chronic obstructive pulmonary disease

## These are NOT underlying CODs:

- Acute myocardial infarct
- Large volume hemoptysis
- Chronic renal failure
- Chronic respiratory failure

# How many lines must I use?

## **Good enough DC:**

Complications of renal transplantation

*due to*

Autosomal dominant polycystic kidney disease

## **Better DC:**

Polymicrobial septic shock

*due to*

Cytomegalovirus-related perforation of the small intestine

*due to*

Renal transplant-related immunosuppression

*due to*

Autosomal dominant polycystic kidney disease



# How many lines must I use? (cont.)

Blunt force injuries of the head

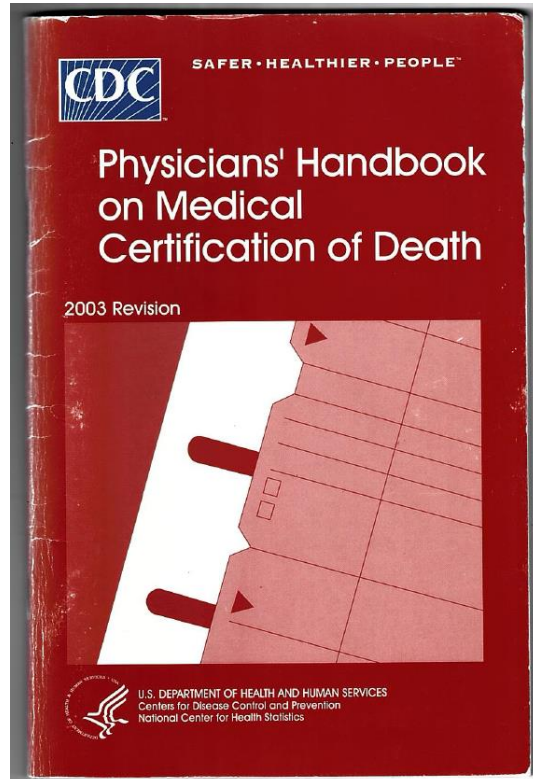
Gunshot wound of the chest

Hanging

Mixed drug (heroin, fentanyl, and cocaine) intoxication

# What is Part II?

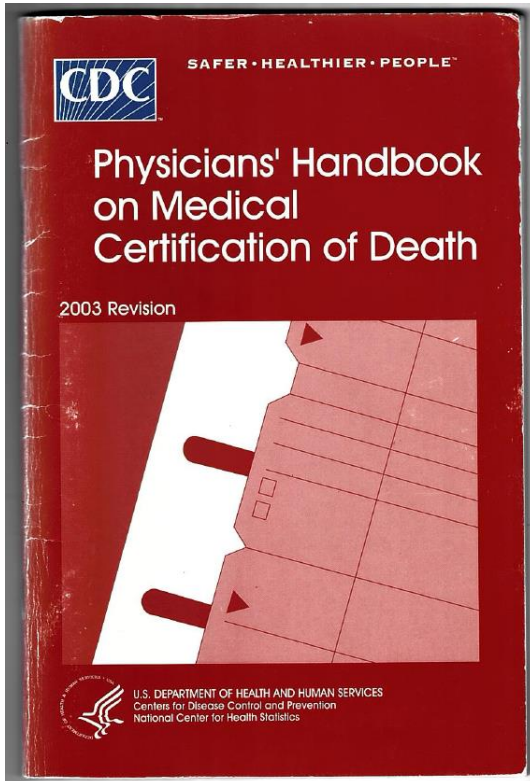
## “other significant conditions”



### **Part II of the cause-of-death section (other significant conditions)**

All other important diseases or conditions that were present at the time of death and that may have contributed to the death, but did not lead to the underlying cause of death listed in Part I or were not reported in the chain of events in Part I, should be recorded on these lines. (More than one condition can be reported per line in Part II.)

# How sure must I be?



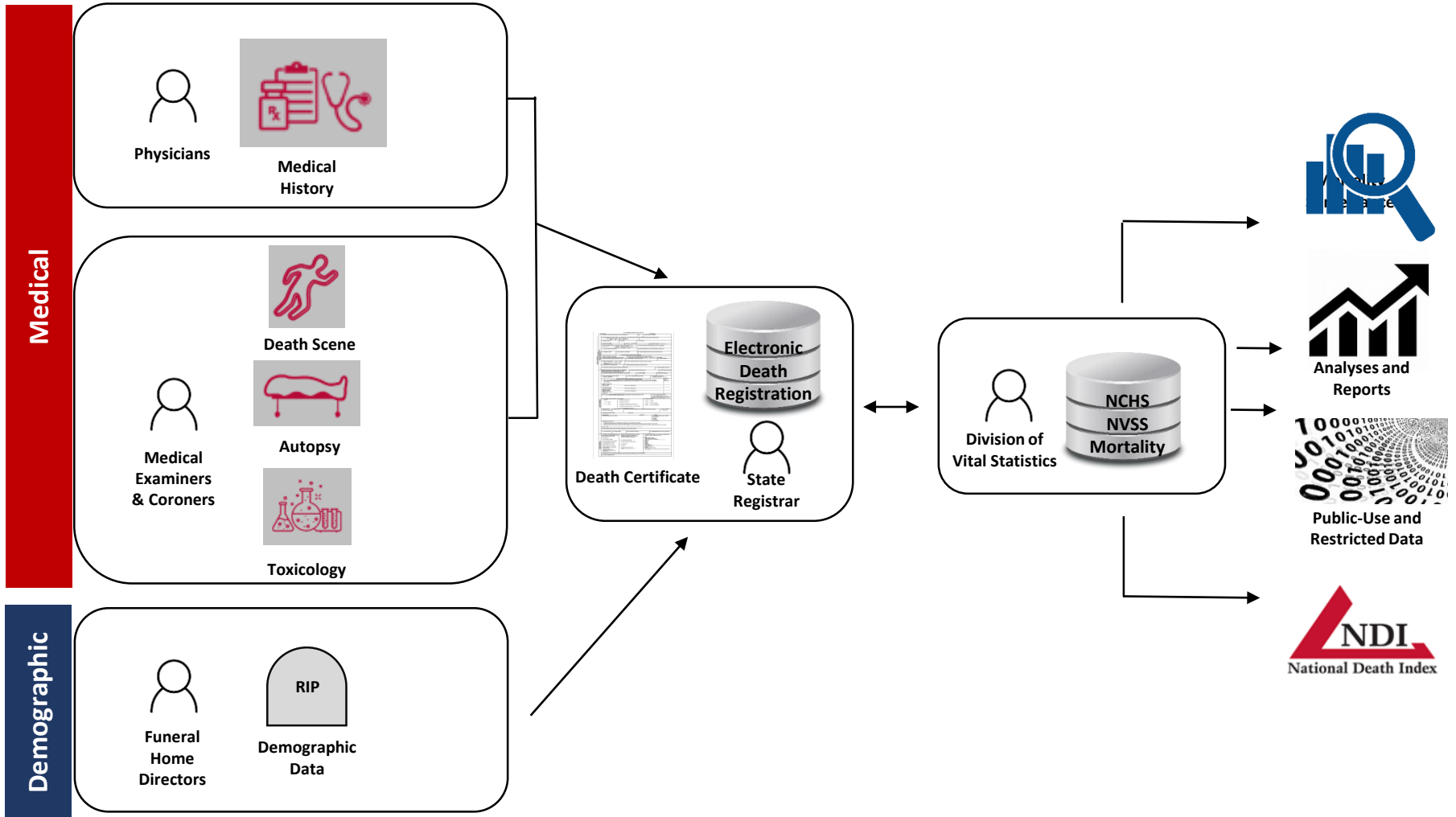
**The cause-of-death information should be the physician's best medical OPINION.** Report each disease, abnormality, injury, or poisoning that the physician believes adversely affected the decedent. A condition can be listed as "probable" if it has not been definitively diagnosed.

“Public health mortality data are only as good as the quality of death certificates ... .”

Gill JR, DeJoseph ME.  
The importance of proper death certification  
during the COVID-19 pandemic.  
*JAMA*. 2020; 324(1):27-28.

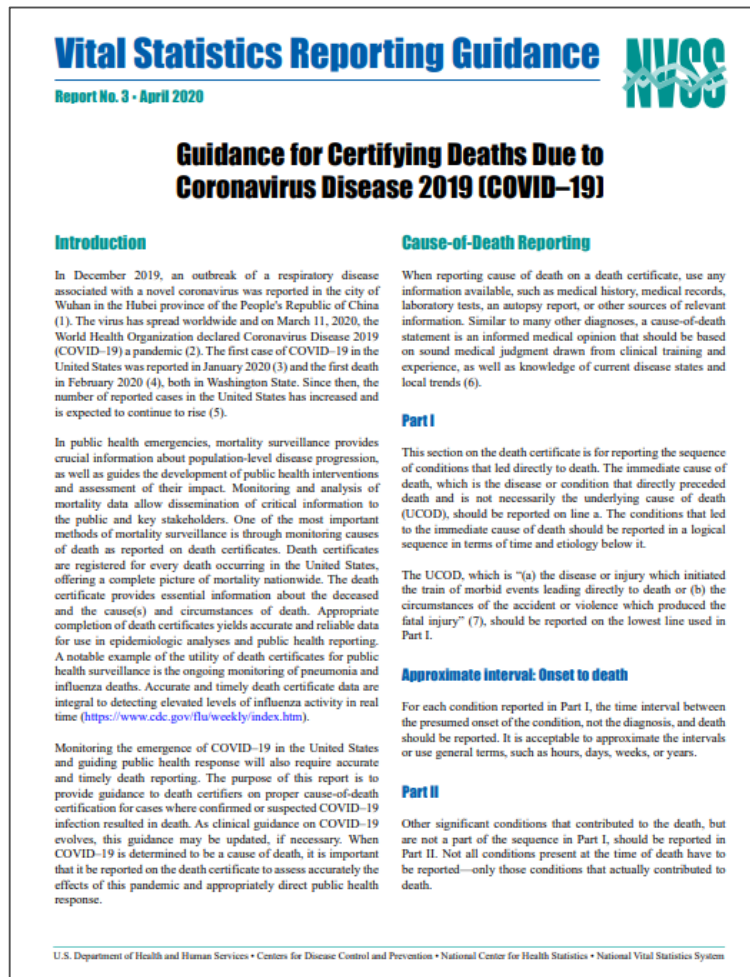



# National Vital Statistics System



# Reporting COVID-19 on death certificates

- Report COVID-19 on death certificates if:
  - COVID-19 was the underlying cause of death
  - COVID-19 was a significant factor that contributed to death
- Report the appropriate causal pathway in Part I
  - Include all conditions and complications that were caused by COVID-19
  - Report in a sequence that is logical in terms of time and etiology
- Report any and all **significant** conditions that contributed to death in Part II
- Ok to use other terminology consistent with COVID-19, e.g., SARS-CoV-2, 2019 novel coronavirus
- COVID-19 should **not** be reported on death certificates if it did not cause or contribute to death



**Vital Statistics Reporting Guidance** 

Report No. 3 • April 2020

## Guidance for Certifying Deaths Due to Coronavirus Disease 2019 (COVID-19)

### Introduction

In December 2019, an outbreak of a respiratory disease associated with a novel coronavirus was reported in the city of Wuhan in the Hubei province of the People's Republic of China (1). The virus has spread worldwide and on March 11, 2020, the World Health Organization declared Coronavirus Disease 2019 (COVID-19) a pandemic (2). The first case of COVID-19 in the United States was reported in January 2020 (3) and the first death in February 2020 (4), both in Washington State. Since then, the number of reported cases in the United States has increased and is expected to continue to rise (5).

In public health emergencies, mortality surveillance provides crucial information about population-level disease progression, as well as guides the development of public health interventions and assessment of their impact. Monitoring and analysis of mortality data allow dissemination of critical information to the public and key stakeholders. One of the most important methods of mortality surveillance is through monitoring causes of death as reported on death certificates. Death certificates are registered for every death occurring in the United States, offering a complete picture of mortality nationwide. The death certificate provides essential information about the deceased and the cause(s) and circumstances of death. Appropriate completion of death certificates yields accurate and reliable data for use in epidemiologic analyses and public health reporting. A notable example of the utility of death certificates for public health surveillance is the ongoing monitoring of pneumonia and influenza deaths. Accurate and timely death certificate data are integral to detecting elevated levels of influenza activity in real time (<https://www.cdc.gov/flu/weekly/index.htm>).

Monitoring the emergence of COVID-19 in the United States and guiding public health response will also require accurate and timely death reporting. The purpose of this report is to provide guidance to death certifiers on proper cause-of-death certification for cases where confirmed or suspected COVID-19 infection resulted in death. As clinical guidance on COVID-19 evolves, this guidance may be updated, if necessary. When COVID-19 is determined to be a cause of death, it is important that it be reported on the death certificate to assess accurately the effects of this pandemic and appropriately direct public health response.

### Cause-of-Death Reporting

When reporting cause of death on a death certificate, use any information available, such as medical history, medical records, laboratory tests, an autopsy report, or other sources of relevant information. Similar to many other diagnoses, a cause-of-death statement is an informed medical opinion that should be based on sound medical judgment drawn from clinical training and experience, as well as knowledge of current disease states and local trends (6).

### Part I

This section on the death certificate is for reporting the sequence of conditions that led directly to death. The immediate cause of death, which is the disease or condition that directly preceded death and is not necessarily the underlying cause of death (UCOD), should be reported on line a. The conditions that led to the immediate cause of death should be reported in a logical sequence in terms of time and etiology below it.

The UCOD, which is "(a) the disease or injury which initiated the train of morbid events leading directly to death or (b) the circumstances of the accident or violence which produced the fatal injury" (7), should be reported on the lowest line used in Part I.

### Approximate Interval: Onset to death

For each condition reported in Part I, the time interval between the presumed onset of the condition, not the diagnosis, and death should be reported. It is acceptable to approximate the intervals or use general terms, such as hours, days, weeks, or years.

### Part II

Other significant conditions that contributed to the death, but are not a part of the sequence in Part I, should be reported in Part II. Not all conditions present at the time of death have to be reported—only those conditions that actually contributed to death.

U.S. Department of Health and Human Services • Centers for Disease Control and Prevention • National Center for Health Statistics • National Vital Statistics System

Reporting guidance can be found at:  
<https://www.cdc.gov/nchs/covid19/coding-and-reporting.htm>

# Example 1

<b>CAUSE OF DEATH (See instructions and examples)</b>		Approximate interval: Onset to death
<p>32. <b>PART I.</b> Enter the <u>chain of events</u>--diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.</p> <p>IMMEDIATE CAUSE (Final disease or condition -----&gt; resulting in death)</p> <p>Sequentially list conditions, if any, leading to the cause listed on line a. Enter the <b>UNDERLYING CAUSE</b> (disease or injury that initiated the events resulting in death) <b>LAST</b></p>		
a. <u>Acute respiratory distress syndrome</u> Due to (or as a consequence of):	_____	<u>3 days</u>
b. <u>Viral pneumonia</u> Due to (or as a consequence of):	_____	<u>1 week</u>
c. <u>COVID-19</u> Due to (or as a consequence of):	_____	<u>1 week</u>
d. _____	_____	_____
<p><b>PART II.</b> Enter other <u>significant conditions contributing to death</u> but not resulting in the underlying cause given in PART I.</p> <p style="text-align: center;">Chronic obstructive pulmonary disease, hypertension</p>		<p>33. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
		<p>34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>35. DID TOBACCO USE CONTRIBUTE TO DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> Probably <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown</p>	<p>36. IF FEMALE: <input type="checkbox"/> Not pregnant within past year <input type="checkbox"/> Pregnant at time of death <input type="checkbox"/> Not pregnant, but pregnant within 42 days of death <input type="checkbox"/> Not pregnant, but pregnant 43 days to 1 year before death <input type="checkbox"/> Unknown if pregnant within the past year</p>	<p>37. MANNER OF DEATH <input checked="" type="checkbox"/> Natural <input type="checkbox"/> Homicide <input type="checkbox"/> Accident <input type="checkbox"/> Pending Investigation <input type="checkbox"/> Suicide <input type="checkbox"/> Could not be determined</p>

# Example 2

<b>CAUSE OF DEATH (See instructions and examples)</b>		Approximate interval: Onset to death
<p>32. <b>PART I.</b> Enter the <u>chain of events</u>--diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.</p> <p>IMMEDIATE CAUSE (Final disease or condition -----&gt; resulting in death)</p> <p>Sequentially list conditions, if any, leading to the cause listed on line a. Enter the <b>UNDERLYING CAUSE</b> (disease or injury that initiated the events resulting in death) <b>LAST</b></p>		
<p>a. <u>Cardiac arrhythmia</u> Due to (or as a consequence of): _____</p> <p>b. <u>Myocarditis</u> Due to (or as a consequence of): _____</p> <p>c. <u>COVID-19</u> Due to (or as a consequence of): _____</p> <p>d. _____</p>		<p>Minutes</p> <hr/> <p>2 week</p> <hr/> <p>2 weeks</p> <hr/>
<p><b>PART II.</b> Enter other <u>significant conditions contributing to death</u> but not resulting in the underlying cause given in PART I.</p> <p style="text-align: center; font-size: 1.2em;">Diabetes mellitus (type 2), hypertension</p>		<p>33. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
		<p>34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
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# Example 3

<b>CAUSE OF DEATH (See instructions and examples)</b>		Approximate interval: Onset to death
<p>32. <b>PART I.</b> Enter the <u>chain of events</u>--diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.</p> <p>IMMEDIATE CAUSE (Final disease or condition -----&gt; resulting in death)</p> <p>Sequentially list conditions, if any, leading to the cause listed on line a. Enter the <b>UNDERLYING CAUSE</b> (disease or injury that initiated the events resulting in death) <b>LAST</b></p>		<p>3 years</p> <hr/> <hr/> <hr/> <hr/>
<p>a. <u>Adenocarcinoma of the esophagus</u> Due to (or as a consequence of): _____</p> <p>b. _____ Due to (or as a consequence of): _____</p> <p>c. _____ Due to (or as a consequence of): _____</p> <p>d. _____</p>		
<p><b>PART II.</b> Enter other <u>significant conditions contributing to death</u> but not resulting in the underlying cause given in PART I.</p> <p style="text-align: center; font-size: 1.2em;">COVID-19, obesity, diabetes mellitus (type 2)</p>		<p>33. WAS AN AUTOPSY PERFORMED? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
		<p>34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>35. DID TOBACCO USE CONTRIBUTE TO DEATH? <input type="checkbox"/> Yes <input type="checkbox"/> Probably <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown</p>	<p>36. IF FEMALE: <input type="checkbox"/> Not pregnant within past year <input type="checkbox"/> Pregnant at time of death <input type="checkbox"/> Not pregnant, but pregnant within 42 days of death <input type="checkbox"/> Not pregnant, but pregnant 43 days to 1 year before death <input type="checkbox"/> Unknown if pregnant within the past year</p>	<p>37. MANNER OF DEATH <input checked="" type="checkbox"/> Natural <input type="checkbox"/> Homicide <input type="checkbox"/> Accident <input type="checkbox"/> Pending Investigation <input type="checkbox"/> Suicide <input type="checkbox"/> Could not be determined</p>

# Example 4

<b>CAUSE OF DEATH (See instructions and examples)</b>			Approximate interval: Onset to death
<p>32. <b>PART I.</b> Enter the <u>chain of events</u>--diseases, injuries, or complications--that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on a line. Add additional lines if necessary.</p> <p>IMMEDIATE CAUSE (Final disease or condition -----&gt; resulting in death)</p> <p>Sequentially list conditions, if any, leading to the cause listed on line a. Enter the <b>UNDERLYING CAUSE</b> (disease or injury that initiated the events resulting in death) <b>LAST</b></p>			1 day
a.	Acute respiratory distress Due to (or as a consequence of):		5 days
b.	Probable COVID-19 Due to (or as a consequence of):		
c.	 Due to (or as a consequence of):		
d.	 Due to (or as a consequence of):		
<p><b>PART II.</b> Enter other <u>significant conditions contributing to death</u> but not resulting in the underlying cause given in PART I.</p> <p>Ischemic stroke</p>		<p>33. WAS AN AUTOPSY PERFORMED?</p> <p style="text-align: center;"><input type="checkbox"/> Yes   <input checked="" type="checkbox"/> No</p>	
		<p>34. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH?   <input type="checkbox"/> Yes   <input type="checkbox"/> No</p>	
<p>35. DID TOBACCO USE CONTRIBUTE TO DEATH?</p> <p><input type="checkbox"/> Yes   <input type="checkbox"/> Probably</p> <p><input checked="" type="checkbox"/> No   <input type="checkbox"/> Unknown</p>	<p>36. IF FEMALE:</p> <p><input checked="" type="checkbox"/> Not pregnant within past year</p> <p><input type="checkbox"/> Pregnant at time of death</p> <p><input type="checkbox"/> Not pregnant, but pregnant within 42 days of death</p> <p><input type="checkbox"/> Not pregnant, but pregnant 43 days to 1 year before death</p> <p><input type="checkbox"/> Unknown if pregnant within the past year</p>	<p>37. MANNER OF DEATH</p> <p><input checked="" type="checkbox"/> Natural   <input type="checkbox"/> Homicide</p> <p><input type="checkbox"/> Accident   <input type="checkbox"/> Pending Investigation</p> <p><input type="checkbox"/> Suicide   <input type="checkbox"/> Could not be determined</p>	

## Some important things to consider

- Cause of death statement should be your best medical opinion
- Consider carefully the role of COVID-19
  - Was it the underlying cause of death?
  - Was it a significant contributing factor?
  - Or was it incidental, i.e., not a factor?
- COVID-19 should **not** be reported on death certificates if it did not cause or contribute to death
- Consider the contribution of pre-existing chronic diseases

## National Center for Health Statistics

CDC > NCHS > COVID-19 Data from NCHS



 [COVID-19 Data from NCHS](#)

### COVID-19 Death Data and Resources

Daily Updates of Totals by Week and State

Weekly Updates by Select Demographic and Geographic Characteristics

Health Disparities: Race and Hispanic Origin

Excess Deaths Associated with COVID-19

# COVID-19 Death Data and Resources

NCHS is responding to [Coronavirus Disease 2019 \(COVID-19\)](#) with new resources to help monitor and report deaths from COVID-19.

Below please find our latest provisional death counts, guidance for filling out death certificates for deaths due to COVID-19, and other important alerts and information.



#### [Understanding the Numbers](#)

Learn how provisional counts are produced and how they differ from other sources.



#### [Understanding Death Certificate Data](#)

Learn more about cause-of-death data and improving the quality of information on death certificates.

<https://www.cdc.gov/nchs/nvss/covid-19.htm>

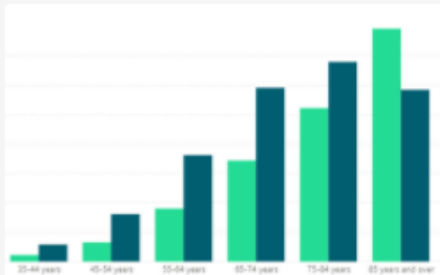
# Provisional Death Counts for Coronavirus Disease 2019 (COVID-19)



## Daily updates of totals by week and state

Tabulated data on provisional death counts for COVID-19, by week and state.

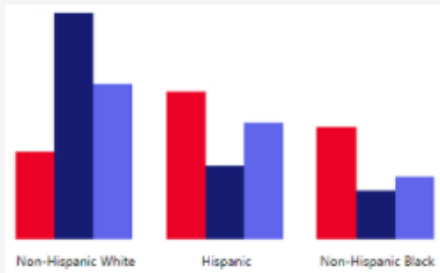
Updated Monday–Friday, by 12 p.m. EST



## Weekly Updates by Select Demographic and Geographic Characteristics

Tabulated data on provisional counts of deaths due to COVID-19 by age, sex, race and Hispanic origin, and comorbidities. Also includes an index of state-level and county-level mortality data available for download.

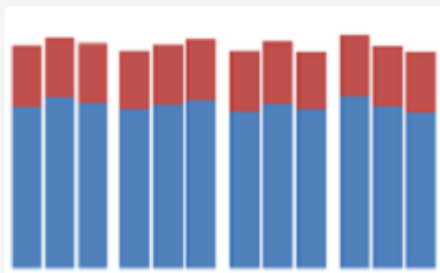
Updated Wednesdays, by 5 p.m. EST



## Health Disparities: Race and Hispanic Origin

Visualizations of deaths involving coronavirus disease 2019 (COVID-19) by race and Hispanic origin group and age.

Updated Wednesdays, by 5 p.m. EST

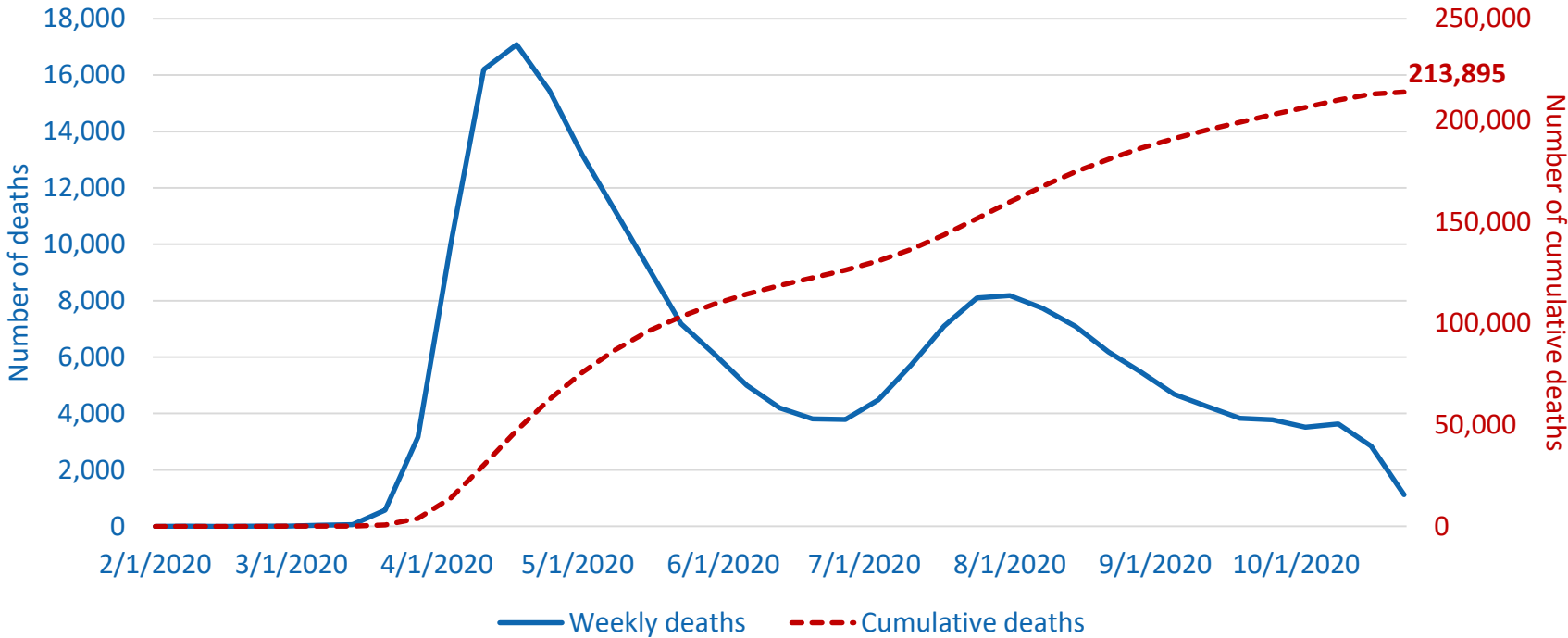


## Excess Deaths Associated with COVID-19

Visualizations of estimates of excess deaths related to the COVID-19 pandemic.

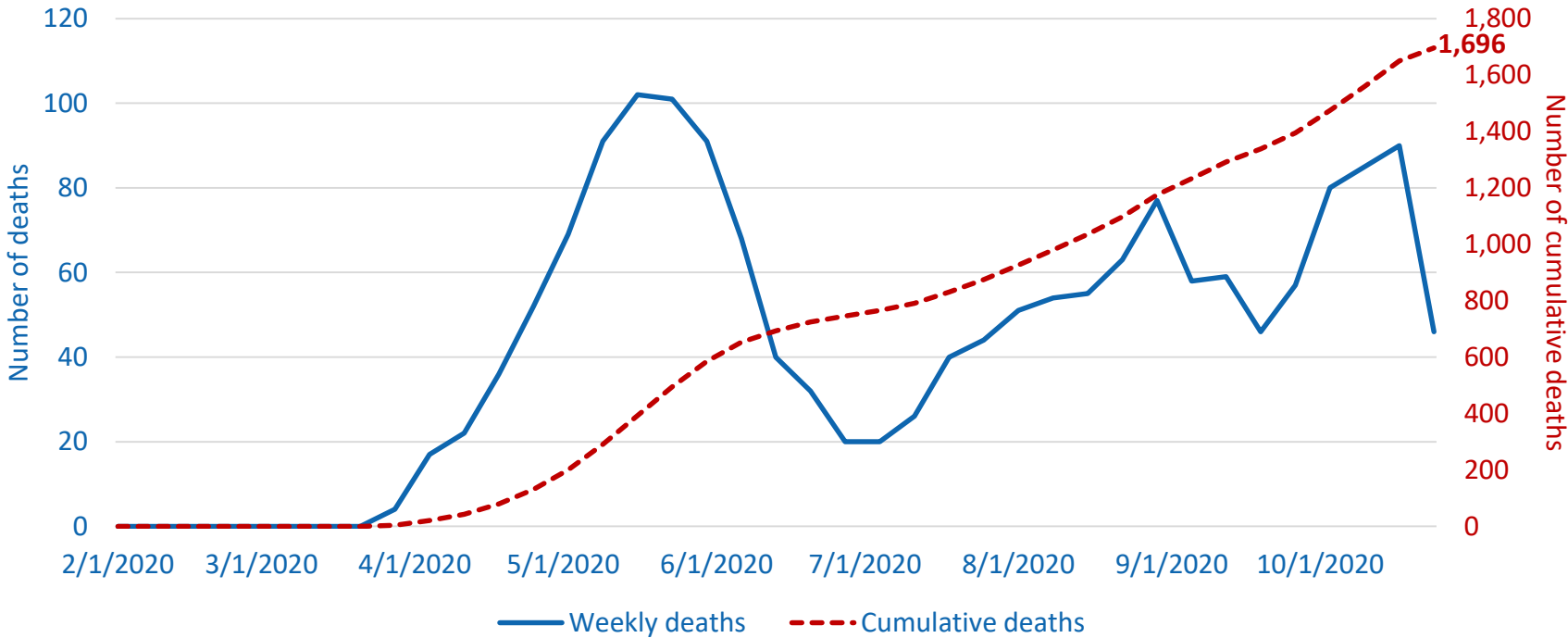
Updated Wednesdays, by 5 p.m. EST

# Weekly and cumulative COVID-19 deaths in the US: February 1 – October 24, 2020



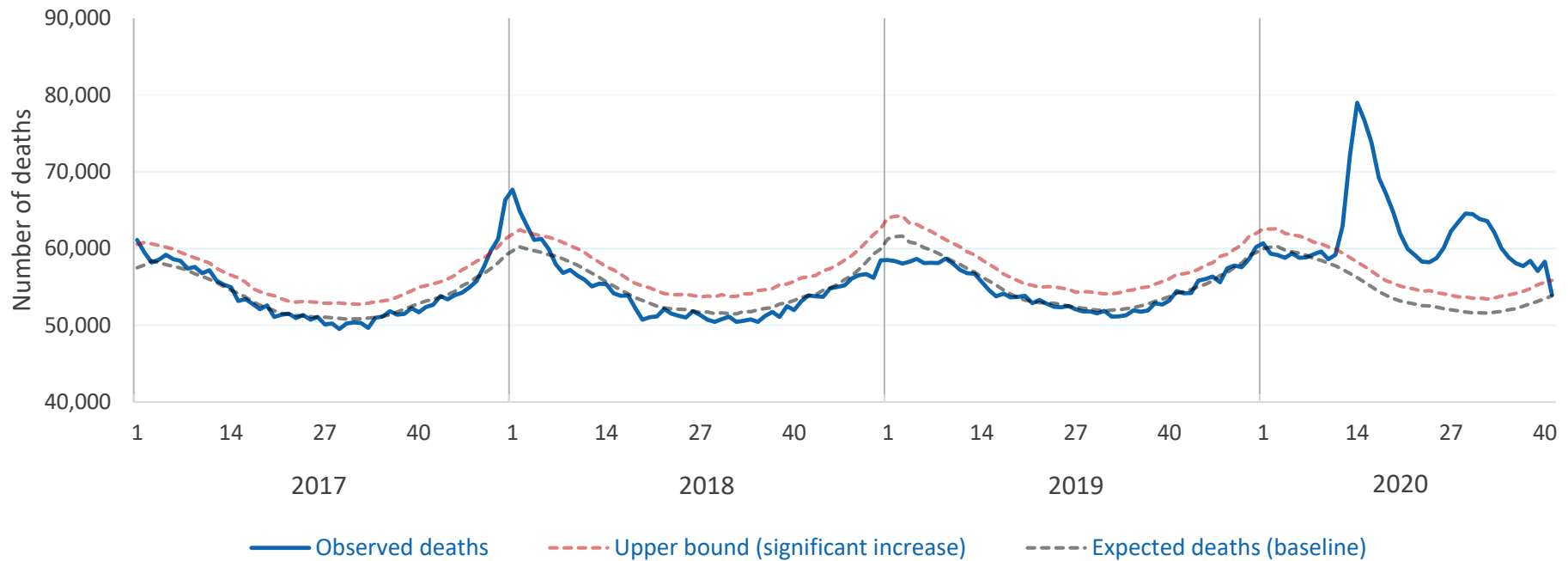
Note: Observed deaths in the most recent weeks are underestimated.  
Data are available at: <https://www.cdc.gov/nchs/nvss/covid-19.htm>.

# Weekly and cumulative COVID-19 deaths in Iowa: February 1 – October 24, 2020



Note: Observed deaths in the most recent weeks are underestimated.  
Data are available at: <https://www.cdc.gov/nchs/nvss/covid-19.htm>.

# Excess deaths in the US: January 1, 2017 – October 17, 2020

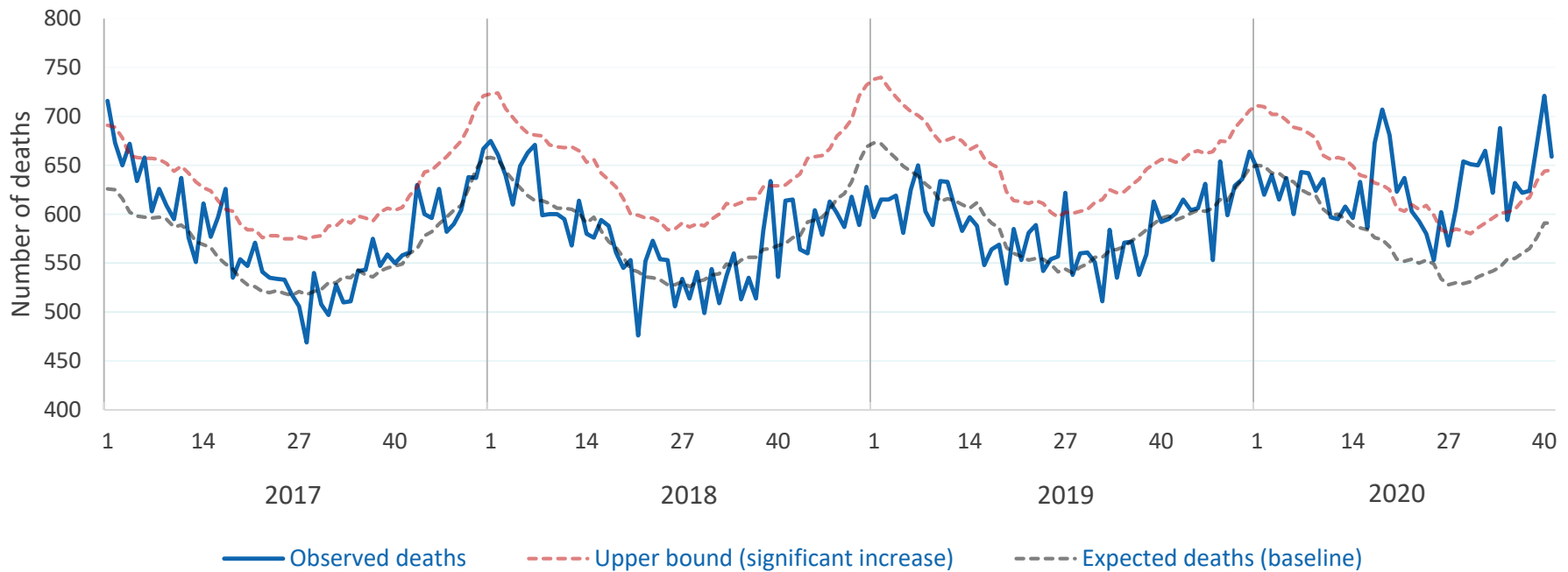


Total predicted number of excess deaths from 2/1/2020 through 10/17/2020 for the United States: 236,480 – 318,355

Note: Observed deaths in the most recent weeks are underestimated.



# Excess deaths in Iowa: January 1, 2017 – October 17, 2020



Total predicted number of excess deaths from 2/1/2020 through 10/17/2020 for Iowa: 826 – 2,188

Note: Observed deaths in the most recent weeks are underestimated.

Questions?