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# **MORTALITY FROM ROAD CRASHES IN THE INDIVIDUAL U.S. STATES: A COMPARISON WITH LEADING CAUSES OF DEATH**

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MORTALITY FROM ROAD CRASHES IN THE INDIVIDUAL U.S. STATES:  
A COMPARISON WITH LEADING CAUSES OF DEATH

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16. Abstract  <p>This study compared, for each U.S. state, the fatalities per population from road crashes with fatalities per population from five leading causes of death (heart diseases, cancer, lung diseases, strokes, and Alzheimer's disease) and from all causes. The raw data, applicable to 2013, came from the Centers for Disease Control and Prevention, and the National Highway Traffic Safety Administration.</p> <p>The main findings are as follows:</p> <ol style="list-style-type: none"> <li>(1) In the United States, there were 10.4 fatalities from road crashes per 100,000 population, as compared with 193.3 from heart diseases, 185.0 from cancer, 47.2 from lung diseases, 40.8 from strokes, and 26.8 from Alzheimer's disease. The highest fatality rate from road crashes was in Montana (22.6) and the lowest in the District of Columbia (3.1).</li> <li>(2) In the United States, fatalities from road crashes represented 1.3% of fatalities from all causes. The highest percentage was in Montana (2.4%) and the lowest in the District of Columbia (0.4%).</li> <li>(3) In the United States, fatalities from road crashes corresponded to 5.4% of fatalities from heart diseases, 5.6% of fatalities from cancer, 21.9% of fatalities from lung diseases, 25.4% of fatalities from strokes, and 38.6% of fatalities from Alzheimer's disease.</li> <li>(4) Fatalities from road crashes as a percentage of fatalities from other causes of death varied greatly among the states. For example, fatalities from road crashes as a percentage of fatalities from Alzheimer's disease ranged from 91.4% in New Mexico to 13.3% in Washington.</li> </ol>					
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## **Introduction**

In a recent study, we compared road fatalities from road crashes to fatalities from leading causes of death in 193 countries (Sivak and Schoettle, 2014), in order to evaluate worldwide road safety in the context of public health. The present study was designed to perform an analogous examination using the individual U.S. states as the units of the analysis. Specifically, the present study compared mortality from road crashes with mortality from five leading causes of death: heart diseases, cancer, lung diseases, strokes, and Alzheimer's disease.

## **Method**

Data concerning fatalities from road crashes in the individual U.S. states came from NHTSA (2015), while data concerning fatalities from heart diseases (I00-I09, I11, I13, I20-I51), malignant neoplasm (C00-C97; "cancer"), chronic lower respiratory diseases (J40-J47; "lung diseases"), cerebrovascular diseases (I60-I69; "strokes"), and Alzheimer's disease (G30) came from the CDC (2014). (Each disease listed above is followed by the corresponding International Classification of Diseases codes in parentheses [WHO, 2015].) All data were for 2013 (the latest year available).

## Results

### *Fatality rates per population*

Tables 1 through 7, and Figures 1 through 7 present the following fatality rates per population for each state: overall, road crashes, cancer, heart diseases, lung diseases, strokes, and Alzheimer's disease. In these tables and figures, the states are divided into three groups of 17 each according to the magnitude of these rates (low, medium, or high).

### *Overall fatality rate*

In the United States, there were 821.5 fatalities from all causes per 100,000 population (Table 1). The highest rate (1178.0 in West Virginia) was 2.2 times the lowest rate (543.7 in Alaska).

The five states with the highest rates were West Virginia, Alabama, Arkansas, Mississippi, and Maine. The five states with the lowest rates were Alaska, Utah, Colorado, California, and Texas.

Table 1  
 Fatality rate from all causes per 100,000 population, 2013.

State	Rate
Alaska	543.7
Utah	564.2
Colorado	639.9
California	647.9
Texas	677.5
District of Columbia	730.0
Washington	735.3
Hawaii	748.2
Georgia	751.5
Minnesota	756.2
Virginia	759.2
Arizona	762.6
New York	768.0
Nevada	769.4
Maryland	770.6
Idaho	771.3
Wyoming	775.1
New Jersey	802.3
Illinois	802.7
New Mexico	805.9
Massachusetts	815.3
New Hampshire	823.4
Connecticut	824.0
South Dakota	840.2
Nebraska	843.1
North Carolina	846.1
Delaware	860.6
North Dakota	861.6
Oregon	863.6
Wisconsin	871.1
Kansas	878.2
Vermont	899.9
Indiana	924.0
Florida	926.3
Rhode Island	931.2
South Carolina	933.7
Michigan	933.8
Louisiana	935.5
Iowa	936.7
Montana	936.9
Missouri	950.4
Tennessee	976.1
Ohio	978.8
Kentucky	995.6
Oklahoma	996.8
Pennsylvania	1010.8
Maine	1019.9
Mississippi	1026.4
Arkansas	1028.5
Alabama	1038.3
West Virginia	1178.0
<i>U.S.A.</i>	<i>821.5</i>

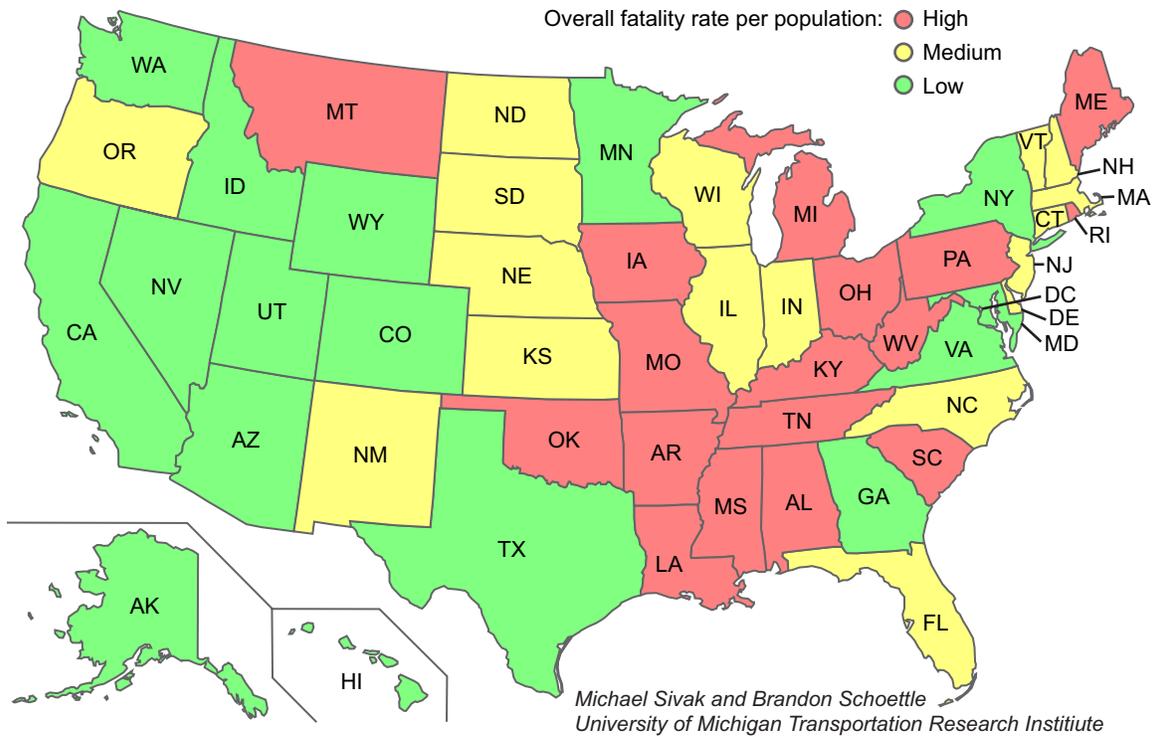


Figure 1. Fatality rate from all causes per population, 2013.

*Fatality rate from road crashes*

In the United States, there were 10.4 fatalities from road crashes per 100,000 population (Table 2). The highest rate (22.6 in Montana) was 7.3 times the lowest rate (3.1 in the District of Columbia).

The five states with the highest rates were Montana, Mississippi, North Dakota, West Virginia, and Alabama. The five states with the lowest rates were the District of Columbia, Massachusetts, New Jersey, New York, and Rhode Island.

Table 2  
 Fatality rate from road crashes per 100,000 population, 2013.

State	Rate
District of Columbia	3.1
Massachusetts	4.9
New Jersey	6.1
New York	6.1
Rhode Island	6.2
Washington	6.3
Alaska	6.9
Minnesota	7.1
Hawaii	7.3
Utah	7.6
Connecticut	7.7
Illinois	7.7
California	7.8
Maryland	7.8
Oregon	8.0
Ohio	8.6
Virginia	9.0
Colorado	9.1
Nevada	9.4
Wisconsin	9.5
Pennsylvania	9.5
Michigan	9.6
New Hampshire	10.2
Iowa	10.3
Delaware	10.7
Maine	10.9
Vermont	11.0
Nebraska	11.3
Georgia	11.8
Indiana	11.9
Kansas	12.1
Florida	12.3
Missouri	12.5
Texas	12.8
Arizona	12.8
North Carolina	13.1
Idaho	13.3
Kentucky	14.5
New Mexico	14.9
Wyoming	14.9
Louisiana	15.2
Tennessee	15.3
South Dakota	16.0
South Carolina	16.1
Arkansas	16.3
Oklahoma	17.6
Alabama	17.6
West Virginia	17.9
North Dakota	20.5
Mississippi	20.5
Montana	22.6
<i>U.S.A.</i>	<i>10.4</i>

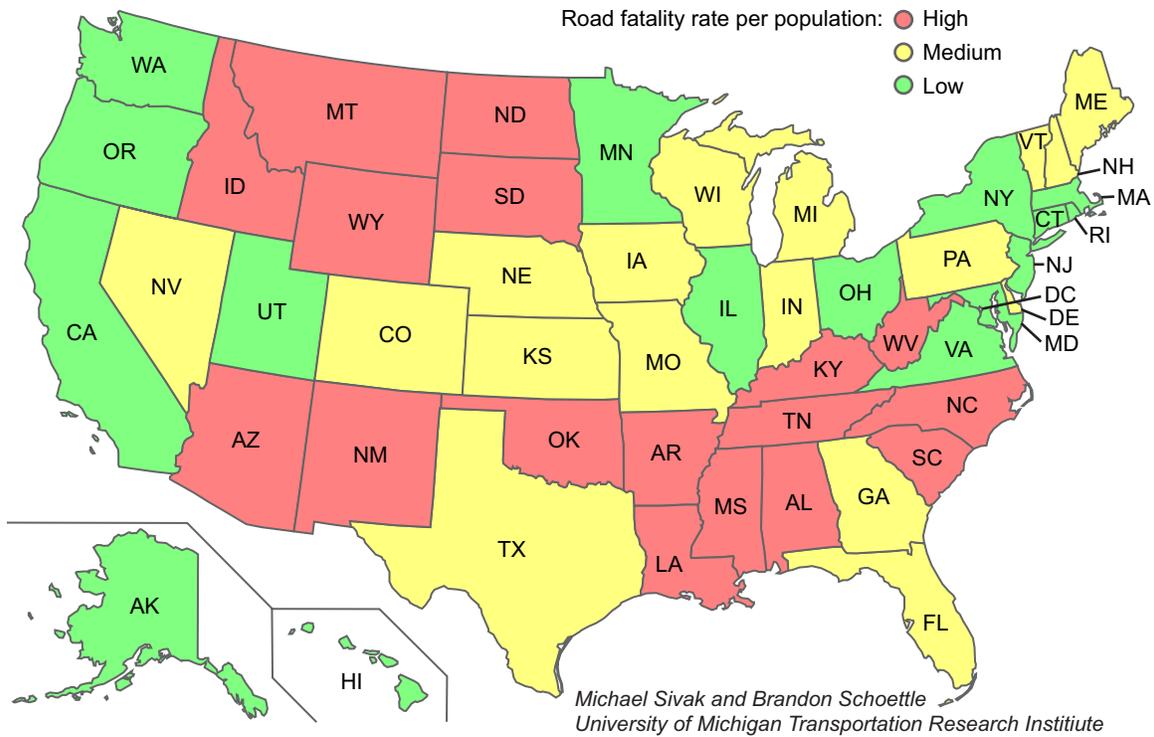


Figure 2. Fatality rate from road crashes per population, 2013.

### *Fatality rate from heart diseases*

In the United States, there were 193.3 fatalities from heart diseases per 100,000 population (Table 3). The highest rate (258.0 in Alabama) was 2.7 times the lowest rate (96.0 in Alaska).

The five states with the highest rates were Alabama, Mississippi, Oklahoma, West Virginia, and Arkansas. The five states with the lowest rates were Alaska, Utah, Colorado, Minnesota, and Washington.

Table 3  
 Fatality rate from heart diseases per 100,000 population, 2013.

State	Rate
Alaska	96.0
Utah	114.6
Colorado	122.5
Minnesota	142.3
Washington	151.0
Texas	152.0
Idaho	154.8
California	157.3
Wyoming	161.2
Arizona	162.3
New Mexico	164.2
Virginia	165.4
Georgia	165.6
Oregon	166.0
Hawaii	179.6
Massachusetts	179.6
Nebraska	180.9
North Carolina	181.1
New Hampshire	183.9
Kansas	185.4
Maryland	189.7
North Dakota	191.0
Illinois	192.8
South Dakota	192.9
Vermont	194.7
Nevada	194.8
Connecticut	197.2
Montana	197.4
Wisconsin	197.9
Delaware	201.0
South Carolina	202.1
District of Columbia	207.3
New Jersey	207.4
Indiana	209.6
Maine	211.3
Florida	218.2
Louisiana	223.7
New York	224.1
Rhode Island	224.8
Iowa	226.3
Kentucky	226.9
Tennessee	227.9
Ohio	232.3
Missouri	233.2
Michigan	244.1
Pennsylvania	247.6
Arkansas	249.3
West Virginia	251.6
Oklahoma	252.5
Mississippi	257.9
Alabama	258.0
<i>U.S.A.</i>	<i>193.3</i>

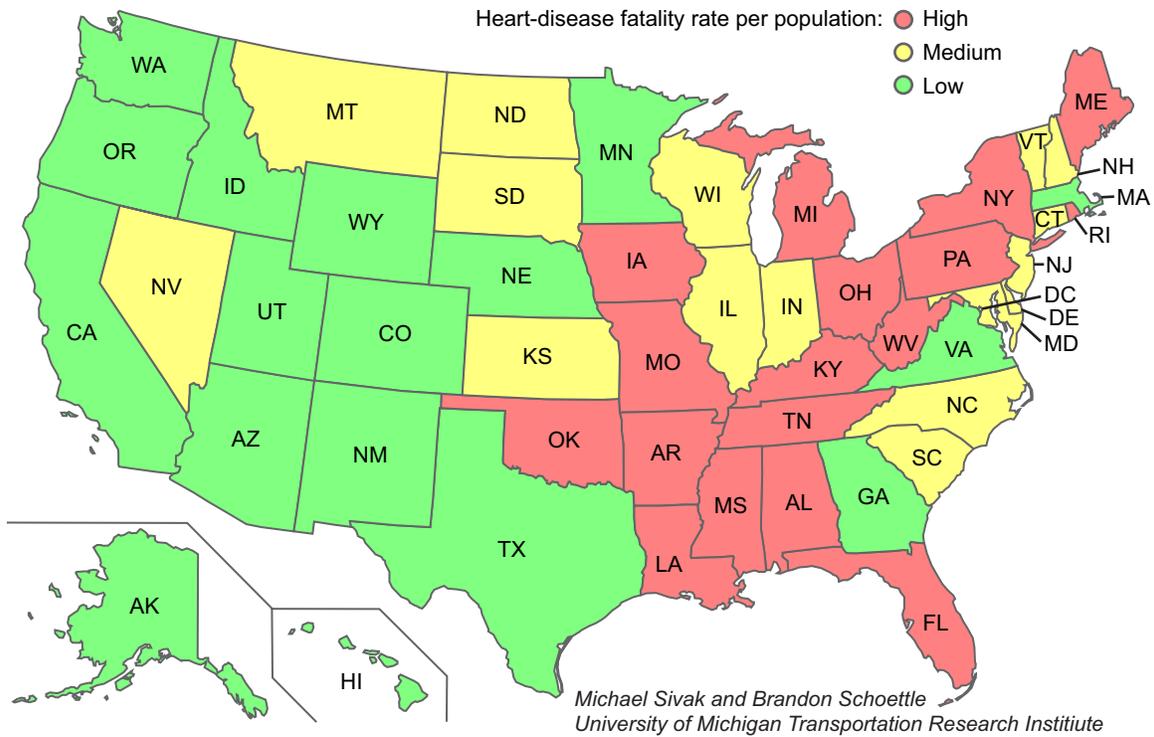


Figure 3. Fatality rate from heart diseases per population, 2013.

*Fatality rate from cancer*

In the United States, there were 185.0 fatalities from cancer per 100,000 population (Table 4). The highest rate (254.4 in West Virginia) was 2.5 times the lowest rate (102.4 in Utah).

The five states with the highest rates were West Virginia, Maine, Kentucky, Arkansas, and Pennsylvania. The five states with the lowest rates were the Utah, Alaska, Colorado, Texas, and California.

Table 4  
 Fatality rate from cancer per 100,000 population, 2013.

State	Rate
Utah	102.4
Alaska	138.2
Colorado	139.6
Texas	145.2
California	150.6
Wyoming	162.4
Georgia	164.3
Hawaii	166.1
New Mexico	167.0
Idaho	167.9
District of Columbia	169.4
Washington	171.1
Arizona	171.2
Nevada	172.6
Virginia	174.5
Minnesota	177.1
North Dakota	177.8
Maryland	178.9
New York	181.9
New Jersey	183.3
Connecticut	184.1
Nebraska	185.1
Kansas	185.9
South Dakota	186.7
North Carolina	188.8
Illinois	190.1
Massachusetts	192.1
New Hampshire	195.2
Montana	196.7
Oregon	198.4
Wisconsin	198.9
Indiana	201.8
Louisiana	203.6
South Carolina	204.1
Delaware	205.8
Michigan	205.8
Oklahoma	208.8
Vermont	210.3
Iowa	210.6
Alabama	213.7
Missouri	214.3
Tennessee	214.8
Ohio	215.9
Mississippi	218.2
Florida	218.6
Rhode Island	221.2
Pennsylvania	223.2
Arkansas	226.0
Kentucky	229.4
Maine	242.9
West Virginia	254.4
<i>U.S.A.</i>	<i>185.0</i>

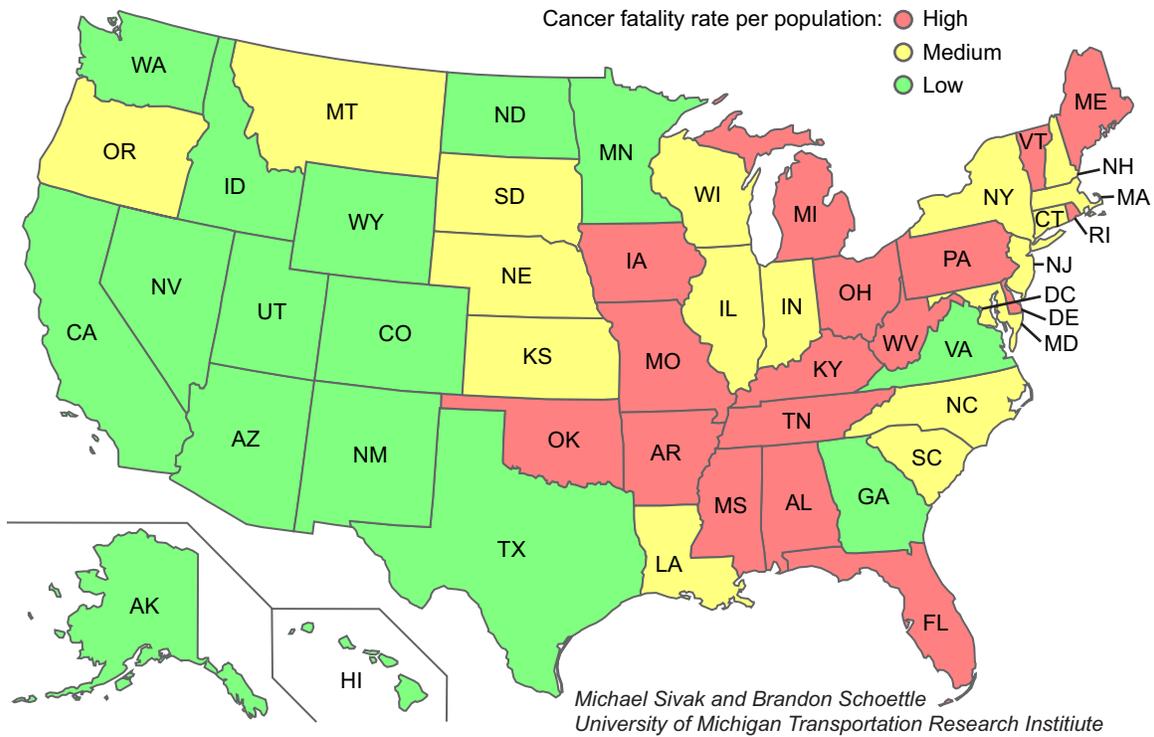


Figure 4. Fatality rate from cancer per population, 2013.

*Fatality rate from lung diseases*

In the United States, there were 47.2 fatalities from lung diseases per 100,000 population (Table 5). The highest rate (85.7 in West Virginia) was 4.3 times the lowest rate (19.9 in Hawaii).

The five states with the highest rates were West Virginia, Kentucky, Arkansas, Oklahoma, and Maine. The five states with the lowest rates were Hawaii, the District of Columbia, Utah, Alaska, and Maryland.

Table 5  
 Fatality rate from lung diseases per 100,000 population, 2013.

State	Rate
Hawaii	19.9
District of Columbia	23.2
Utah	24.8
Alaska	26.8
Maryland	34.6
California	35.5
New York	36.2
New Jersey	36.5
Texas	37.1
Connecticut	37.5
Massachusetts	38.4
Virginia	38.5
Georgia	41.8
Washington	42.1
Minnesota	42.2
Illinois	42.9
Colorado	43.6
Rhode Island	45.3
North Dakota	45.8
Wisconsin	48.6
South Dakota	49.2
Louisiana	49.2
Idaho	50.1
New Mexico	50.4
Arizona	50.5
New Hampshire	50.5
North Carolina	50.6
Oregon	51.6
Delaware	52.1
Pennsylvania	52.6
Nevada	53.1
Nebraska	55.2
Michigan	56.0
Vermont	56.3
South Carolina	57.7
Kansas	57.8
Florida	58.2
Mississippi	58.7
Tennessee	60.1
Ohio	60.6
Iowa	61.2
Missouri	62.8
Alabama	63.0
Montana	63.7
Indiana	64.9
Wyoming	66.4
Maine	67.9
Oklahoma	69.6
Arkansas	70.6
Kentucky	72.5
West Virginia	85.7
<i>U.S.A.</i>	<i>47.2</i>

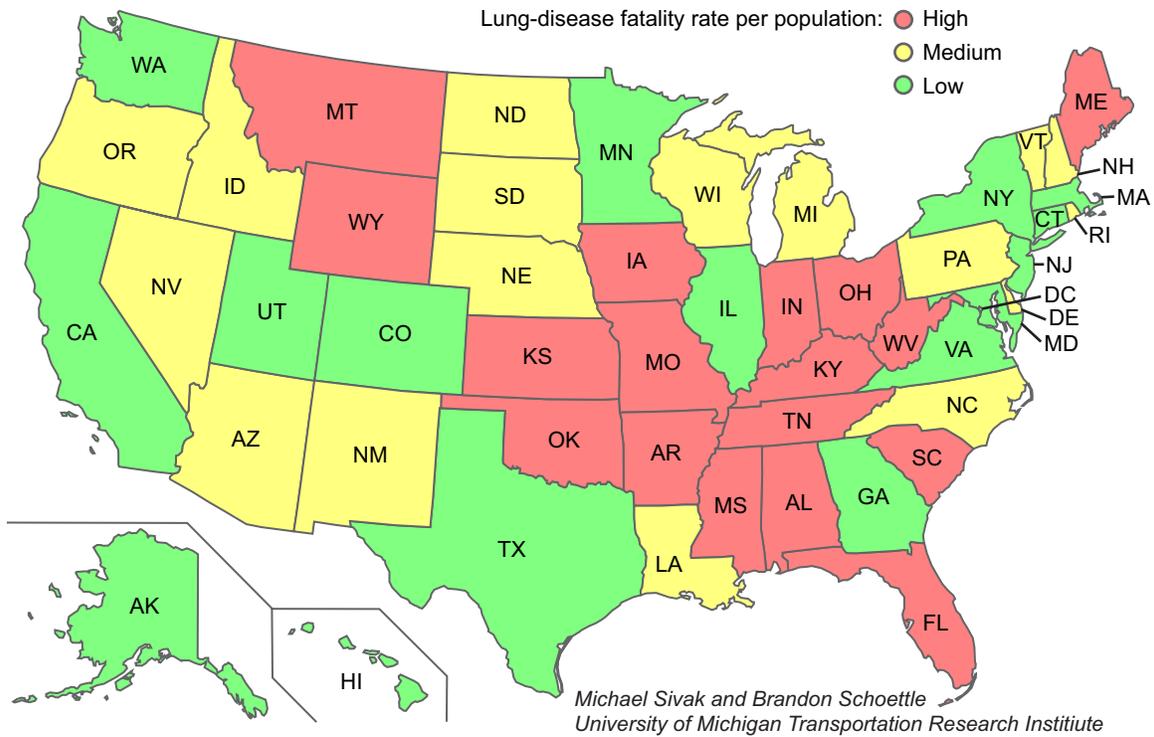


Figure 5. Fatality rate from lung diseases per population, 2013.

#### *Fatality rate from strokes*

In the United States, there were 40.8 fatalities from strokes per 100,000 population (Table 6). The highest rate (55.3 in Arkansas) was 2.2 times the lowest rate (25.7 in Alaska).

The five states with the highest rates were Arkansas, Alabama, West Virginia, South Carolina, and Pennsylvania. The five states with the lowest rates were Alaska, Utah, the District of Columbia, Colorado, and New York.

Table 6  
 Fatality rate from strokes per 100,000 population, 2013.

State	Rate
Alaska	25.7
Utah	28.8
District of Columbia	28.9
Colorado	30.1
New York	31.4
Nevada	32.4
Arizona	32.6
New Mexico	33.0
New Hampshire	33.3
Texas	35.1
Massachusetts	35.2
California	35.7
Wyoming	36.6
Georgia	37.0
Idaho	37.1
Connecticut	37.5
Rhode Island	37.8
Washington	38.0
Minnesota	38.2
New Jersey	38.8
Maryland	39.0
Virginia	39.8
Illinois	41.1
Vermont	41.5
North Dakota	42.3
Nebraska	43.9
Wisconsin	44.2
Delaware	44.2
Michigan	44.2
Florida	44.5
Hawaii	45.2
Oregon	45.2
Kentucky	45.3
Louisiana	45.4
Kansas	45.6
Iowa	45.6
Indiana	45.6
North Carolina	45.7
Maine	46.7
Montana	47.3
Tennessee	48.6
Missouri	48.6
Oklahoma	48.8
Ohio	49.2
South Dakota	49.5
Mississippi	50.1
Pennsylvania	51.7
South Carolina	52.5
West Virginia	53.0
Alabama	53.9
Arkansas	55.3
<i>U.S.A.</i>	<i>40.8</i>

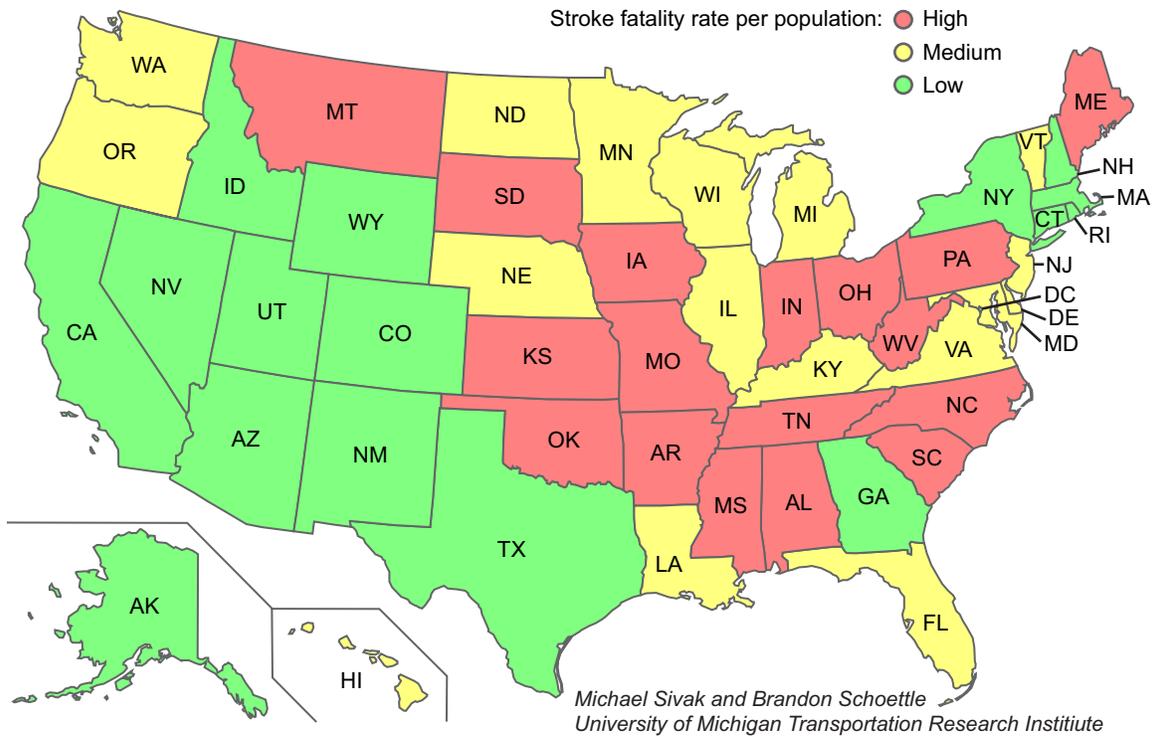


Figure 6. Fatality rate from strokes per population, 2013.

*Fatality rate from Alzheimer’s disease*

In the United States, there were 26.8 fatalities from strokes per 100,000 population (Table 7). The highest rate (50.2 in North Dakota) was 5.1 times the lowest rate (9.8 in Alaska).

The five states with the highest rates were North Dakota, South Dakota, Washington, Vermont, and Iowa. The five states with the lowest rates were Alaska, New York, Utah, Maryland, and Nevada.

Table 7  
 Fatality rate from Alzheimer's disease per 100,000 population, 2013.

State	Rate
Alaska	9.8
New York	13.0
Utah	14.2
Maryland	15.5
Nevada	16.1
New Mexico	16.3
Hawaii	18.5
Virginia	19.9
Texas	20.0
District of Columbia	20.1
New Jersey	20.4
Georgia	20.5
Delaware	20.7
Idaho	21.5
Wyoming	21.6
Illinois	22.7
Connecticut	22.9
Colorado	25.0
Massachusetts	25.4
Kansas	25.6
Pennsylvania	25.6
Florida	26.0
Minnesota	26.3
Montana	26.3
New Hampshire	26.5
Alabama	28.9
Wisconsin	29.1
North Carolina	29.2
Oklahoma	29.7
Nebraska	29.8
Maine	30.2
Mississippi	30.9
California	31.0
Arkansas	31.0
West Virginia	31.8
Indiana	32.0
Michigan	32.5
Louisiana	32.5
Ohio	32.8
Rhode Island	32.9
Kentucky	33.3
Oregon	33.4
Missouri	33.5
South Carolina	34.0
Arizona	36.0
Tennessee	39.0
Iowa	40.5
Vermont	42.9
Washington	47.0
South Dakota	49.5
North Dakota	50.2
<i>U.S.A.</i>	26.8

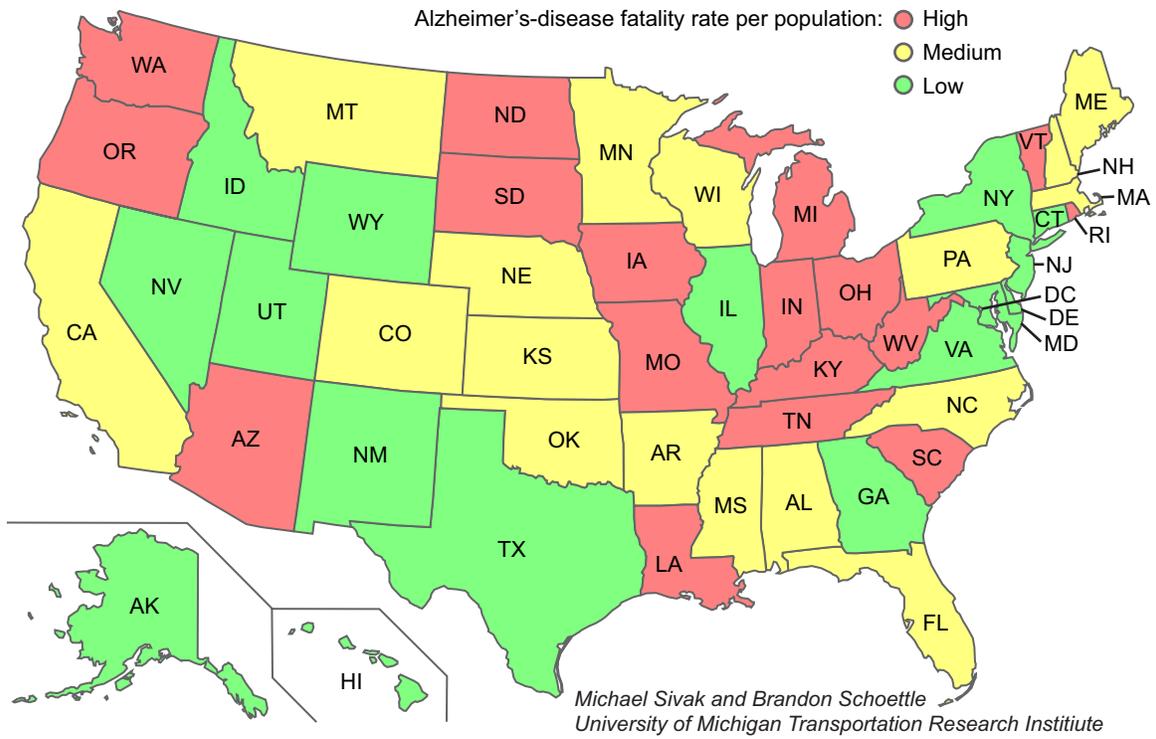


Figure 7. Fatality rate from Alzheimer's disease per population, 2013.

### **Fatalities from road crashes as a percentage of fatalities from other causes of death**

Tables 8 through 13, and Figures 8 through 13 present fatalities from road crashes as a percentage of the following leading causes of death for each state: overall, road crashes, cancer, heart diseases, lung diseases, strokes, and Alzheimer's disease. In these tables and figures, the states are divided into three groups of 17 each according to the magnitude of these percentages (low, medium, or high).

### *Fatalities from road crashes as a percentage of fatalities from all causes of death*

In the United States, fatalities from road crashes represented 1.3% of fatalities from all causes (Table 8). The highest percentage (2.4% in Montana) was 6.0 times the lowest percentage (0.4% in the District of Columbia).

The five states with the highest percentages were Montana, North Dakota, Mississippi, Wyoming, and South Dakota. The five states with the lowest percentages were the District of Columbia, Massachusetts, Rhode Island, New Jersey, and New York.

Table 8  
Road fatalities as a percentage of all fatalities, 2013.

State	Percent
District of Columbia	0.4
Massachusetts	0.6
Rhode Island	0.7
New Jersey	0.8
New York	0.8
Washington	0.9
Ohio	0.9
Oregon	0.9
Connecticut	0.9
Pennsylvania	0.9
Minnesota	0.9
Illinois	1.0
Hawaii	1.0
Maryland	1.0
Michigan	1.0
Maine	1.1
Wisconsin	1.1
Iowa	1.1
Virginia	1.2
California	1.2
Nevada	1.2
Vermont	1.2
New Hampshire	1.2
Delaware	1.2
Alaska	1.3
Indiana	1.3
Missouri	1.3
Florida	1.3
Nebraska	1.3
Utah	1.3
Kansas	1.4
Colorado	1.4
Kentucky	1.5
West Virginia	1.5
North Carolina	1.5
Tennessee	1.6
Georgia	1.6
Arkansas	1.6
Louisiana	1.6
Arizona	1.7
Alabama	1.7
South Carolina	1.7
Idaho	1.7
Oklahoma	1.8
New Mexico	1.8
Texas	1.9
South Dakota	1.9
Wyoming	1.9
Mississippi	2.0
North Dakota	2.4
Montana	2.4
<i>U.S.A.</i>	<i>1.3</i>

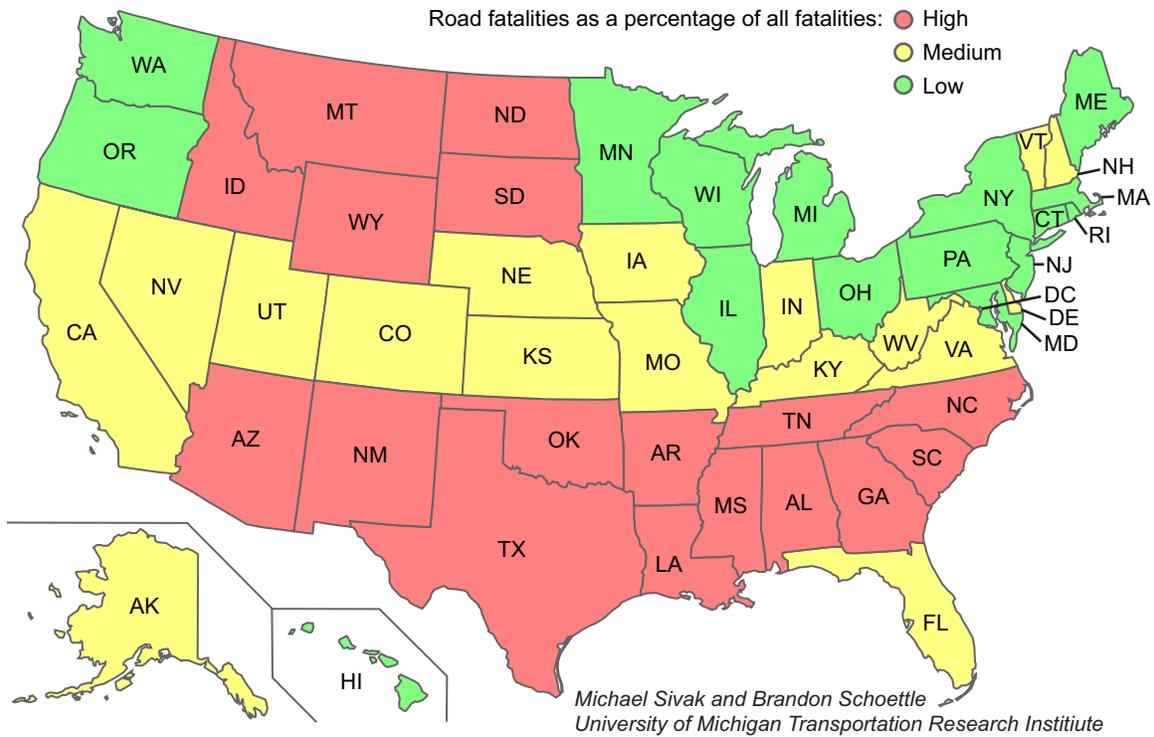


Figure 8. Road fatalities as a percentage of all fatalities, 2013.

*Fatalities from road crashes as a percentage of fatalities from heart diseases*

In the United States, fatalities from road crashes corresponded to 5.4% of fatalities from heart diseases (Table 9). The highest percentage (11.4% in Montana) was 7.6 times the lowest percentage (1.5% in the District of Columbia).

The five states with the highest percentages were Montana, North Dakota, Wyoming, New Mexico, and Idaho. The five states with the lowest percentages were the District of Columbia, Massachusetts, New York, Rhode Island, and New Jersey.

Table 9  
Road fatalities as a percentage of fatalities from heart diseases, 2013.

State	Percent
District of Columbia	1.5
Massachusetts	2.7
New York	2.7
Rhode Island	2.7
New Jersey	2.9
Ohio	3.7
Pennsylvania	3.8
Connecticut	3.9
Michigan	3.9
Illinois	4.0
Hawaii	4.0
Maryland	4.1
Washington	4.1
Iowa	4.5
Wisconsin	4.8
Oregon	4.8
Nevada	4.8
California	5.0
Minnesota	5.0
Maine	5.2
Delaware	5.3
Missouri	5.4
Virginia	5.4
New Hampshire	5.5
Florida	5.6
Vermont	5.7
Indiana	5.7
Nebraska	6.2
Kentucky	6.4
Kansas	6.5
Arkansas	6.5
Utah	6.6
Tennessee	6.7
Louisiana	6.8
Alabama	6.8
Oklahoma	7.0
West Virginia	7.1
Georgia	7.1
Alaska	7.2
North Carolina	7.2
Colorado	7.5
Arizona	7.9
Mississippi	7.9
South Carolina	7.9
South Dakota	8.3
Texas	8.4
Idaho	8.6
New Mexico	9.1
Wyoming	9.3
North Dakota	10.7
Montana	11.4
<i>U.S.A.</i>	<i>5.4</i>

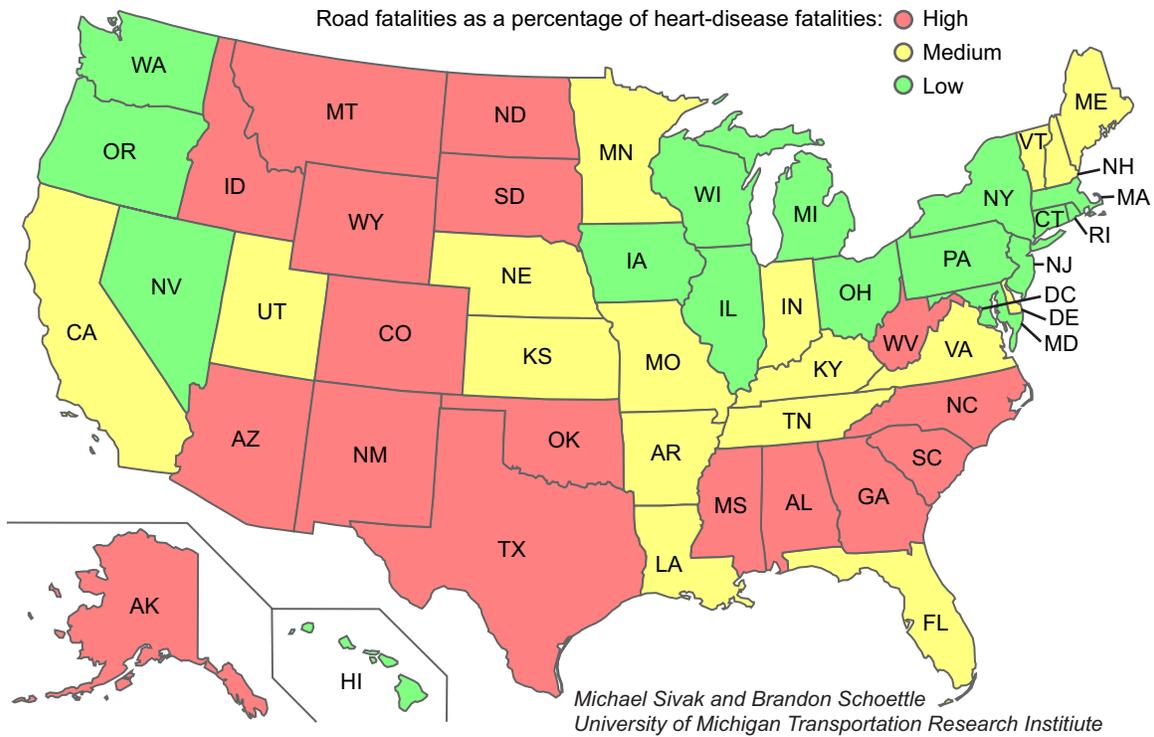


Figure 9. Road fatalities as a percentage of fatalities from heart diseases, 2013.

*Fatalities from road crashes as a percentage of fatalities from cancer*

In the United States, fatalities from road crashes corresponded to 5.6% of fatalities from cancer (Table 10). The highest percentage (11.5% in North Dakota) was 6.4 times the lowest percentage (1.8% in the District of Columbia).

The five states with the highest percentages were North Dakota, Montana, Mississippi, Wyoming, and New Mexico. The five states with the lowest percentages were the District of Columbia, Massachusetts, Rhode Island, New Jersey, and New York.

Table 10  
 Road fatalities as a percentage of fatalities from cancer, 2013.

State	Percent
District of Columbia	1.8
Massachusetts	2.5
Rhode Island	2.8
New Jersey	3.3
New York	3.4
Washington	3.7
Ohio	4.0
Oregon	4.0
Minnesota	4.0
Illinois	4.0
Connecticut	4.2
Pennsylvania	4.2
Hawaii	4.4
Maryland	4.4
Maine	4.5
Michigan	4.6
Wisconsin	4.8
Iowa	4.9
Alaska	5.0
Virginia	5.1
Delaware	5.2
California	5.2
New Hampshire	5.2
Vermont	5.2
Nevada	5.4
Florida	5.6
Missouri	5.8
Indiana	5.9
Nebraska	6.1
Kentucky	6.3
Kansas	6.5
Colorado	6.5
North Carolina	6.9
West Virginia	7.0
Tennessee	7.1
Georgia	7.2
Arkansas	7.2
Utah	7.4
Louisiana	7.5
Arizona	7.5
South Carolina	7.9
Idaho	7.9
Alabama	8.2
Oklahoma	8.4
South Dakota	8.6
Texas	8.8
New Mexico	8.9
Wyoming	9.2
Mississippi	9.4
Montana	11.5
North Dakota	11.5
<i>U.S.A.</i>	5.6

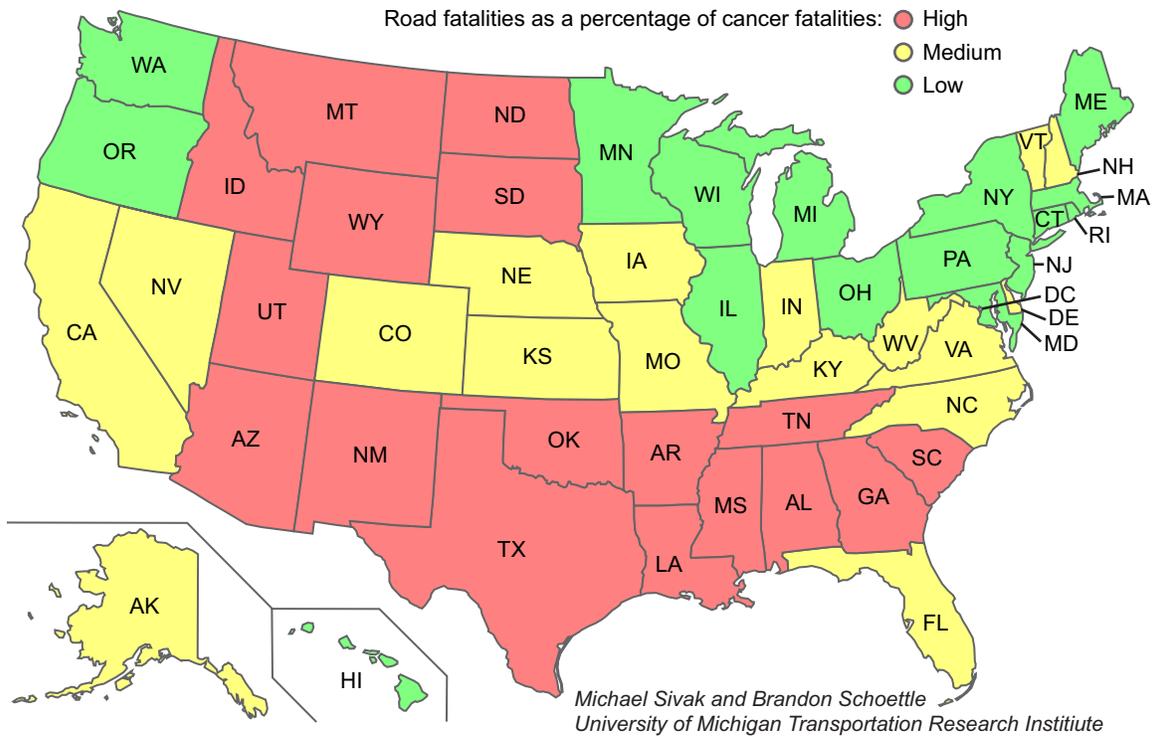


Figure 10. Road fatalities as a percentage of fatalities from cancer, 2013.

*Fatalities from road crashes as a percentage of fatalities from lung diseases*

In the United States, fatalities from road crashes corresponded to 21.9% of fatalities from lung diseases (Table 11). The highest percentage (44.7% in North Dakota) was 3.5 times the lowest percentage (12.7% in Massachusetts).

The five states with the highest percentages were North Dakota, Hawaii, Montana, Mississippi, and Texas. The five states with the lowest percentages were Massachusetts, the District of Columbia, Rhode Island, Ohio, and Washington.

Table 11  
 Road fatalities as a percentage of fatalities from lung diseases, 2013.

State	Percent
Massachusetts	12.7
District of Columbia	13.3
Rhode Island	13.7
Ohio	14.1
Washington	14.9
Oregon	15.4
Maine	16.1
New Jersey	16.7
Iowa	16.8
New York	16.9
Minnesota	16.9
Michigan	17.1
Nevada	17.7
Illinois	17.9
Pennsylvania	18.0
Indiana	18.4
Wisconsin	19.5
Vermont	19.5
Missouri	19.9
Kentucky	20.0
New Hampshire	20.2
Nebraska	20.4
Connecticut	20.5
Delaware	20.5
West Virginia	20.9
Kansas	20.9
Colorado	20.9
Florida	21.2
California	22.1
Wyoming	22.5
Maryland	22.7
Arkansas	23.1
Virginia	23.3
Oklahoma	25.3
Arizona	25.4
Tennessee	25.5
North Carolina	25.8
Alaska	25.9
Idaho	26.5
South Carolina	27.8
Alabama	28.0
Georgia	28.3
New Mexico	29.5
Utah	30.6
Louisiana	30.9
South Dakota	32.5
Texas	34.5
Mississippi	34.9
Montana	35.4
Hawaii	36.6
North Dakota	44.7
<i>U.S.A.</i>	<i>21.9</i>

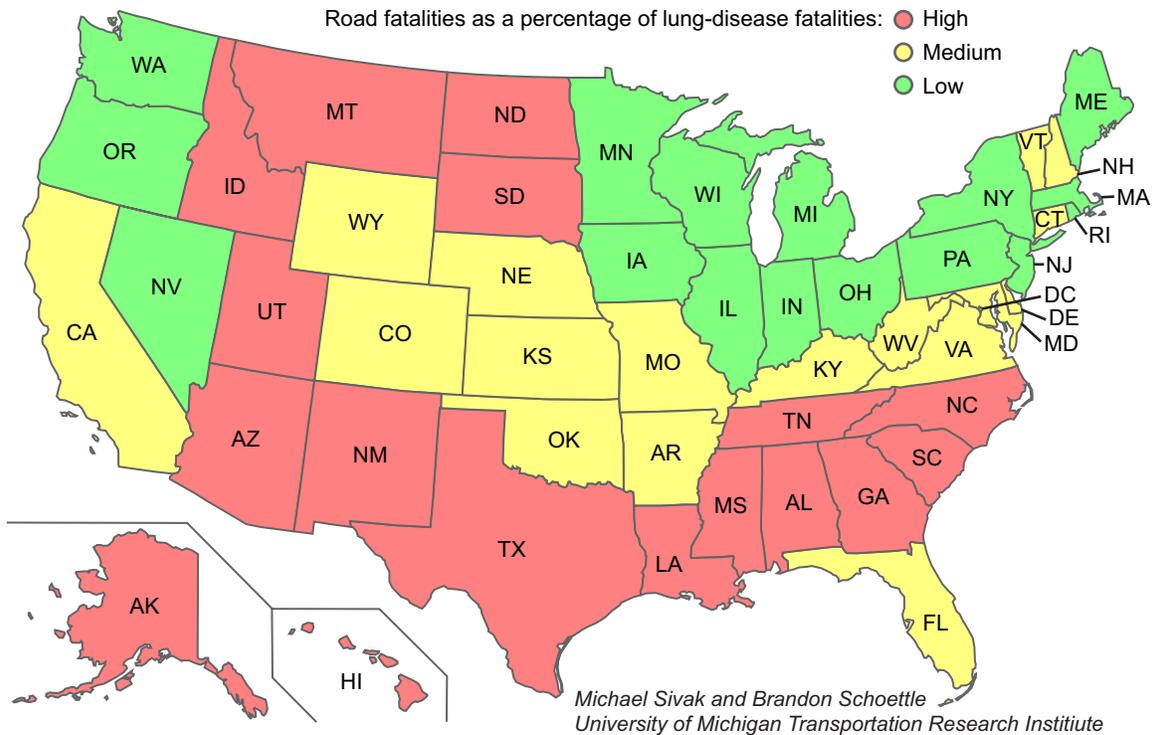


Figure 11. Road fatalities as a percentage of fatalities from lung diseases, 2013.

*Fatalities from road crashes as a percentage of fatalities from strokes*

In the United States, fatalities from road crashes corresponded to 25.4% of fatalities from strokes (Table 12). The highest percentage (48.4% in North Dakota) was 4.5 times the lowest percentage (10.7% in the District of Columbia).

The five states with the highest percentages were North Dakota, Montana, New Mexico, Mississippi, and Wyoming. The five states with the lowest percentages were the District of Columbia, Massachusetts, New Jersey, Hawaii, and Rhode Island.

Table 12  
 Road fatalities as a percentage of fatalities from strokes, 2013.

State	Percent
District of Columbia	10.7
Massachusetts	13.8
New Jersey	15.7
Hawaii	16.1
Rhode Island	16.4
Washington	16.4
Ohio	17.4
Oregon	17.6
Pennsylvania	18.3
Minnesota	18.7
Illinois	18.7
New York	19.4
Maryland	20.1
Connecticut	20.5
Wisconsin	21.4
Michigan	21.7
California	21.9
Iowa	22.5
Virginia	22.5
Maine	23.4
Delaware	24.2
Nebraska	25.7
Missouri	25.8
Indiana	26.1
Utah	26.3
Kansas	26.5
Vermont	26.5
Alaska	27.0
Florida	27.7
North Carolina	28.6
Nevada	29.0
Arkansas	29.5
Colorado	30.3
South Carolina	30.6
New Hampshire	30.6
Tennessee	31.5
Georgia	31.9
Kentucky	32.1
South Dakota	32.3
Alabama	32.7
Louisiana	33.5
West Virginia	33.8
Idaho	35.8
Oklahoma	36.1
Texas	36.4
Arizona	39.3
Wyoming	40.8
Mississippi	40.9
New Mexico	45.0
Montana	47.7
North Dakota	48.4
<i>U.S.A.</i>	<i>25.4</i>

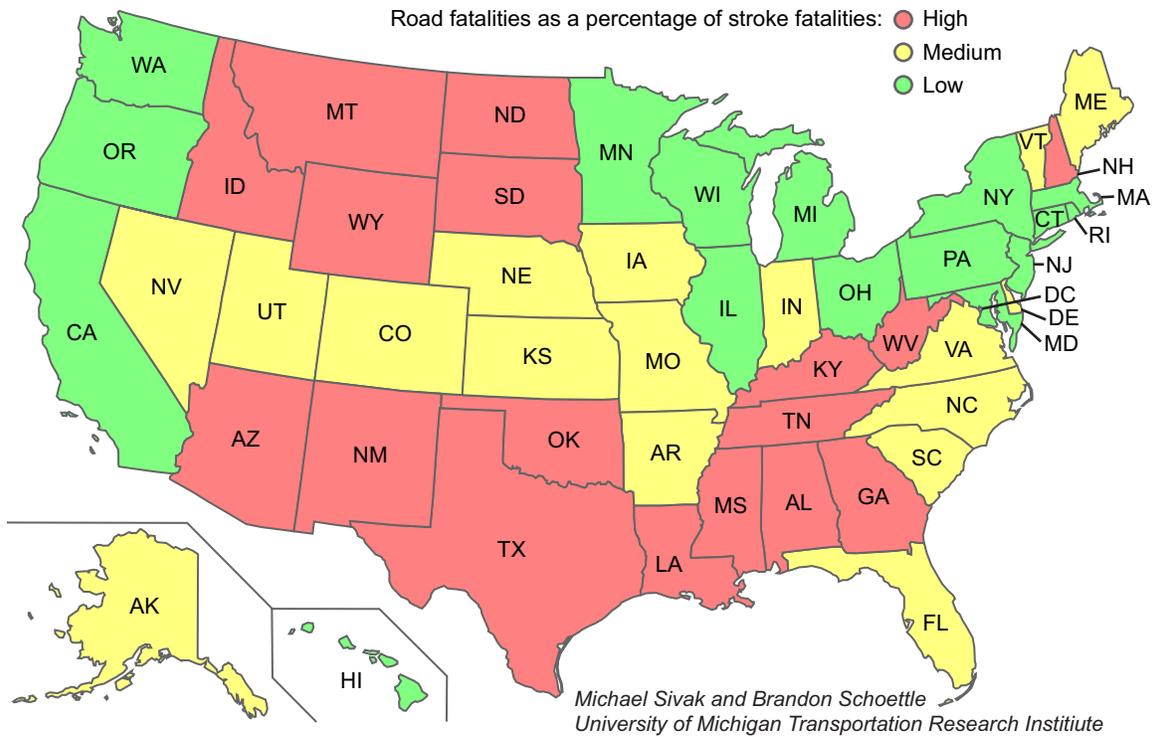


Figure 12. Road fatalities as a percentage of fatalities from strokes, 2013.

*Fatalities from road crashes as a percentage of fatalities from Alzheimer's disease*

In the United States, fatalities from road crashes corresponded to 38.6% of fatalities from Alzheimer's disease (Table 13). The highest percentage (91.4% in New Mexico) was 6.9 times the lowest percentage (13.3% in Washington).

The five states with the highest percentages were New Mexico, Montana, Alaska, Wyoming, and Mississippi. The five states with the lowest percentages were Washington, the District of Columbia, Rhode Island, Massachusetts, and Oregon.

Table 13  
 Road fatalities as a percentage of fatalities from Alzheimer's disease, 2013.

State	Percent
Washington	13.3
District of Columbia	15.4
Rhode Island	18.8
Massachusetts	19.2
Oregon	23.9
California	25.2
Iowa	25.3
Vermont	25.7
Ohio	26.0
Minnesota	27.1
Michigan	29.4
New Jersey	29.9
South Dakota	32.3
Wisconsin	32.5
Connecticut	33.5
Illinois	33.9
Arizona	35.6
Maine	36.2
Colorado	36.6
Pennsylvania	36.9
Indiana	37.2
Missouri	37.4
Nebraska	37.9
New Hampshire	38.5
Hawaii	39.2
Tennessee	39.2
North Dakota	40.8
Kentucky	43.6
North Carolina	44.9
Virginia	45.1
Louisiana	46.7
New York	46.9
Kansas	47.2
South Carolina	47.3
Florida	47.3
Maryland	50.6
Delaware	51.6
Arkansas	52.6
Utah	53.4
West Virginia	56.3
Georgia	57.6
Nevada	58.5
Oklahoma	59.2
Alabama	60.9
Idaho	61.7
Texas	63.9
Mississippi	66.3
Wyoming	69.0
Alaska	70.8
Montana	85.8
New Mexico	91.4
<i>U.S.A.</i>	38.6



## Discussion

### Fatality rates per population

The key findings concerning the examined fatality rates per population are summarized in Table 14. Of particular note is the fact that the largest ratio of the maximum and minimum fatality rates was from road crashes (7.3).

Table 14  
Key findings concerning fatality rates per 100,000 population by cause of death.

Cause of death	United States	Maximum	Minimum	Maximum/minimum
All causes	821.5	1178.0 (West Virginia)	543.7 (Alaska)	2.2
Road crash	10.4	22.6 (Montana)	3.1 (District of Columbia)	7.3
Heart disease	193.3	258.0 (Alabama)	96.0 (Alaska)	2.7
Cancer	185.0	254.4 (West Virginia)	102.4 (Utah)	2.5
Lung disease	47.2	85.7 (West Virginia)	19.9 (Hawaii)	4.3
Stroke	40.8	55.3 (Arkansas)	25.7 (Alaska)	2.2
Alzheimer's disease	26.8	50.2 (North Dakota)	9.8 (Alaska)	5.1

### Fatalities from road crashes as a percentage of fatalities from all causes

In the United States, fatalities from road crashes represented 1.3% of fatalities from all causes. On one extreme, this percentage was 2% or more in three states (2.4% in Montana and North Dakota, and 2.0% in Mississippi). On the other extreme, this percentage was 0.7% or less in three states (0.4% in the District of Columbia, 0.6% in Massachusetts, and 0.7% in Rhode Island).

**Fatalities from road crashes as a percentage of fatalities from leading causes of death**

The key findings concerning fatalities from road crashes as a percentage of fatalities from heart diseases, cancer, lung diseases, strokes, and Alzheimer’s disease are presented in Table 15.

Table 15  
Key findings concerning fatalities from road crashes as a percentage of fatalities from five leading causes of death.

Cause of death	United States	Maximum	Minimum	Maximum/minimum
Heart disease	5.4%	11.4% (Montana)	1.5% (District of Columbia)	7.6
Cancer	5.6%	11.5% (North Dakota)	1.8% (District of Columbia)	6.4
Lung disease	21.9%	44.7% (North Dakota)	12.7% (Massachusetts)	3.5
Stroke	25.4%	48.4% (North Dakota)	10.7% (District of Columbia)	4.5
Alzheimer’s disease	38.6%	91.4% (New Mexico)	13.3% (Washington)	6.9

Table 16 lists the number of states where fatalities from road crashes exceeded 10%, 25%, 50%, and 75%, respectively, from each of the other examined causes of death. Of particular note is the fact that the fatalities from road crashes exceeded 25% of the fatalities from lung diseases in 18 states, from strokes in 30 states, and from Alzheimer’s disease in 46 states.

Table 16  
Number of states where fatalities from road crashes exceeded given percentages of fatalities from five leading causes of death.

Cause of death	Number of states in which fatalities from road crashes were:			
	>10%	>25%	>50%	>75%
Heart disease	2	0	0	0
Cancer	2	0	0	0
Lung disease	51	18	0	0
Stroke	51	30	0	0
Alzheimer's disease	51	46	16	2

### Geographic patterns of the findings

The data in Figures 1 through 13 document geographic patterns with high and low fatality rates from different causes of death, and high and low percentages of road fatalities in comparison to fatalities from other causes of death. However, these patterns are generally not contiguous and they are not consistent with typical groupings of U.S. states, such as the regions and divisions used by the U.S. Census Bureau (2015).

The most contiguous pattern is in Figure 8. The data in this figure show that road fatalities as a percentage of all fatalities were highest in two broad areas: (1) the Northern Rockies and the Dakotas, and (2) the South and the Southwest. On the other hand, road fatalities as a percentage of all fatalities were lowest in the Northeast, the Midwest, the Pacific Northwest, and Hawaii.

### Policy implications

For policy considerations, the most relevant information is in Table 2 (fatality rate from road crashes per population) and Table 8 (road fatalities as a percentage of all fatalities). The ranking of the states on these two measures are similar but not identical. (The correlation coefficient between these two ranks was 0.90.)

The five states with the lowest and highest values on each of these two measures are listed in Table 17. The five states with the lowest road fatalities per population were also the five states with the lowest road fatalities as a percentage of all fatalities (the District of Columbia, Massachusetts, New Jersey, New York, and Rhode Island).

Table 17  
States with the lowest and highest fatality rate from road crashes per population and road fatalities as a percentage of fatalities from all causes (1 = lowest, 51 = highest).

Rank	Road fatalities per population	Road fatalities as a percentage of fatalities from all causes
1	District of Columbia	District of Columbia
2	Massachusetts	Massachusetts
3	New Jersey	Rhode Island
4	New York	New Jersey
5	Rhode Island	New York
...		
47	Alabama	South Dakota
48	West Virginia	Wyoming
49	North Dakota	Mississippi
50	Mississippi	North Dakota
51	Montana	Montana

On the other extreme, the three states with the highest road fatalities per population were also the three states with the highest road fatalities as a percentage of all fatalities (Montana, Mississippi, and North Dakota). Two of the five states with the highest road fatalities per population—West Virginia and Alabama—were replaced by Wyoming and South Dakota among the states with the highest road fatalities as a percentage of all fatalities. (Both Wyoming and South Dakota have lower fatality rates from all causes [the 17<sup>th</sup> and the 24<sup>th</sup> lowest rates] than do West Virginia and Alabama [the highest and the second highest rates—see Table 1]).

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