

# Variation in Cognitive Difficulty Prevalence and Age-Adjusted Alzheimer's Disease Death Rate among Adults Aged 65 and Older, by State - United States, 2016

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## Background

### Alzheimer's disease

- A type of dementia that causes problems with memory, thinking and behavior. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks.
- Fifth leading cause of death among persons aged 65 and older in the US.
- Most common form of dementia (60%-80% of dementia).

### Cognitive difficulty (or impairment)

- A type of disability that increases the risk of developing Alzheimer's or other forms of dementia.

### Objective

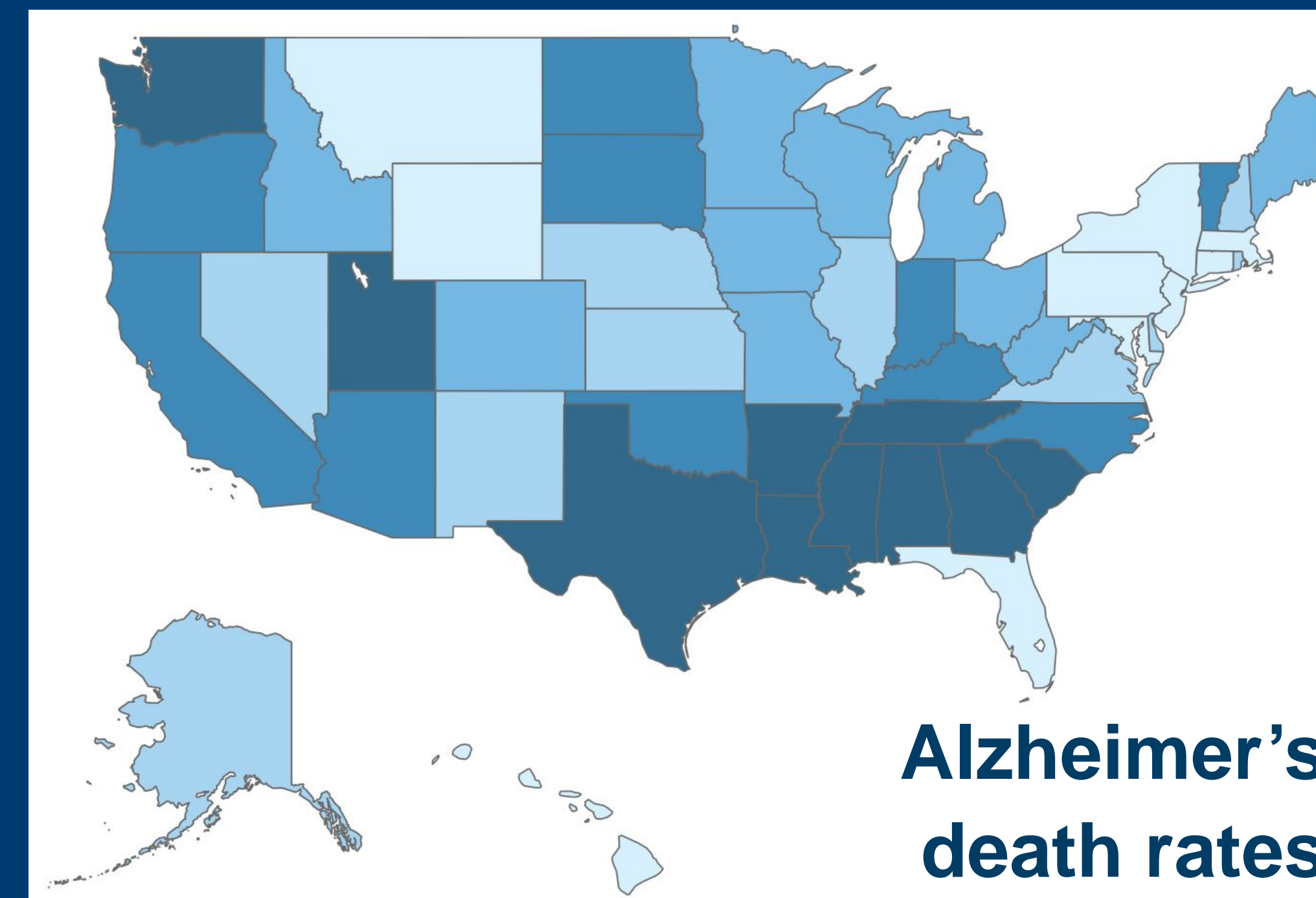
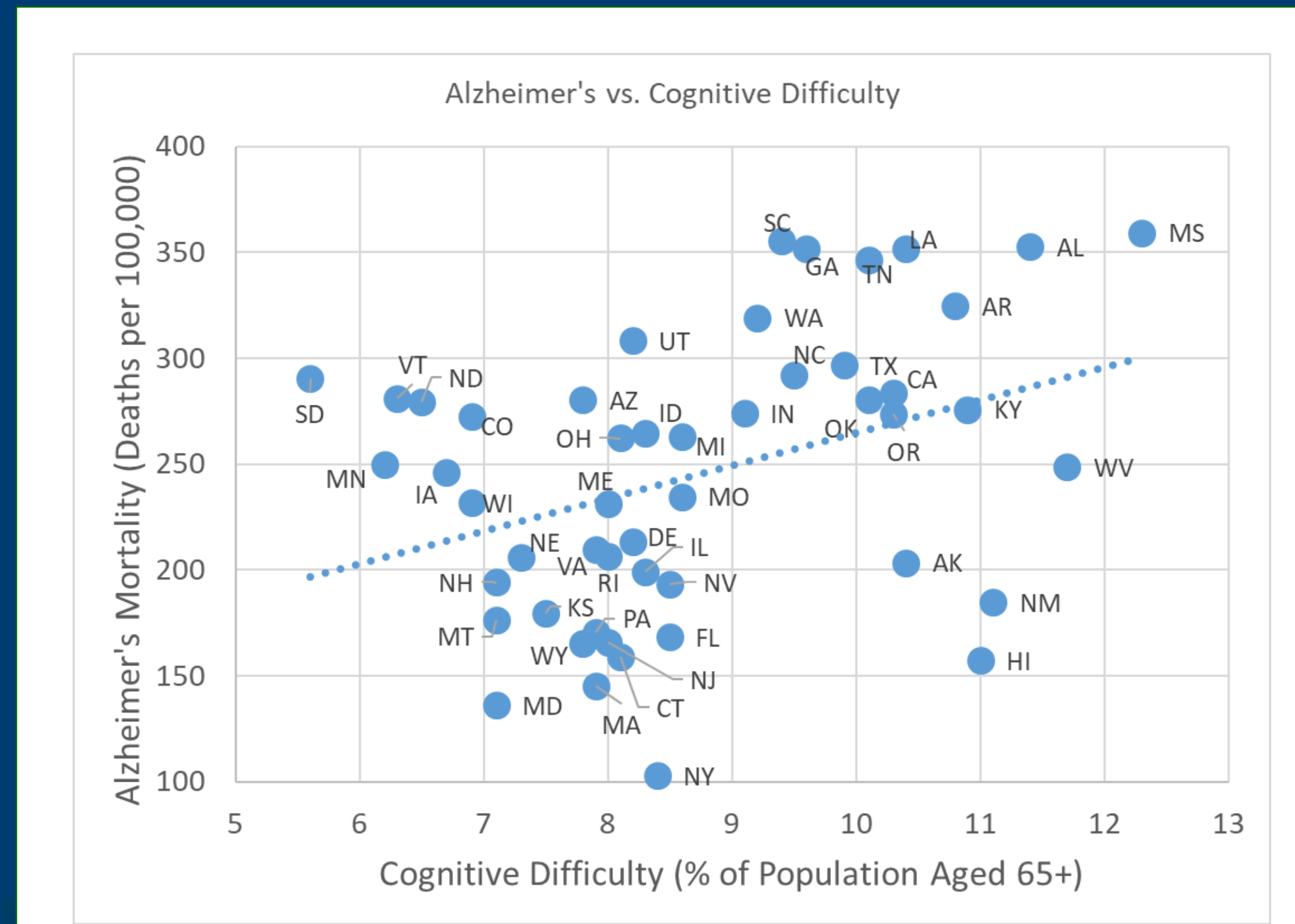
- To describe correlation between cognitive difficulty and Alzheimer's disease death rates in the senior population.

## Methodology

- Cognitive difficulty: American Community Survey 2016 1-yr estimates adults aged 65 and older.
- Alzheimer's disease: Age-adjusted death rates per 100,000 population based on the 2000 US standard population for ICD-10 code G30 using 2016 National Vital Statistics System public use mortality data files.
- The Spearman rank-order correlation coefficient was calculated based on state rankings for each measure.

## Results

Weak association between cognitive difficulty and Alzheimer's mortality rate. Spearman correlation coefficient  $r=0.35$ .

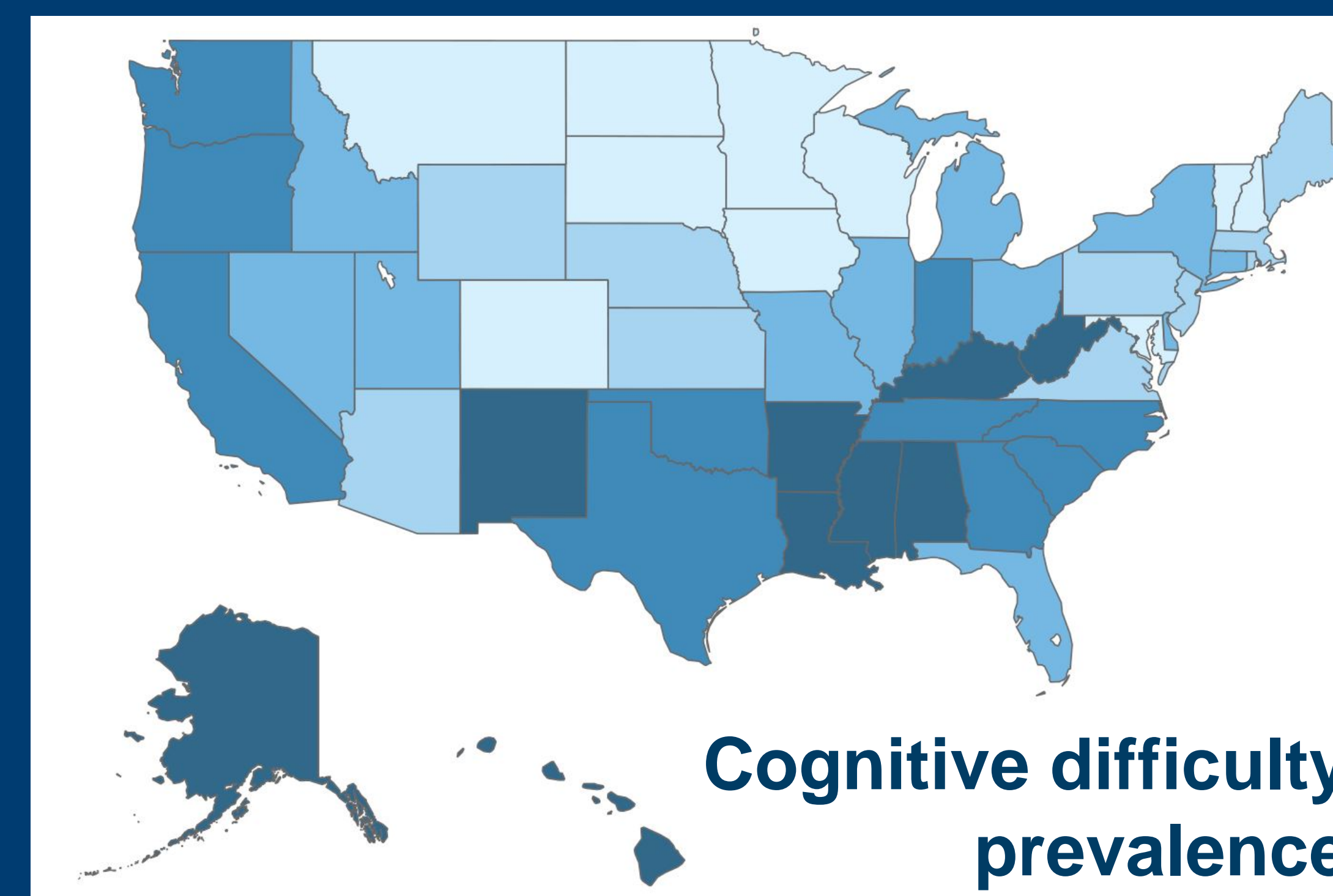


Alzheimer's death rates

Maps shaded by quintile

High mortality rates for Alzheimer's disease is widely spread out across country.

Prevalence of cognitive difficulty is more focused in SE and Western US.



Cognitive difficulty prevalence

Cognitive Difficulty	5.6-7.2	7.3-8.0	8.1-9.0	9.1-10.3	10.4-12.3
Alzheimer's Deaths	102.9-178.0	178.1-220.0	220.1-273.0	273.1-295.0	295.1-359.3

### Rates sorted by increasing prevalence of cognitive difficulty

	Cognitive Difficulty	Alzheimer's Deaths
South Dakota	5.6	290.3
Minnesota	6.2	249.8
Vermont	6.3	281.1
North Dakota	6.5	279.1
Iowa	6.7	245.9
Colorado	6.9	272.6
Wisconsin	6.9	231.9
Maryland	7.1	136.0
Montana	7.1	176.3
New Hampshire	7.1	194.2
Nebraska	7.3	205.7
Kansas	7.5	179.4
Arizona	7.8	280.3
Wyoming	7.8	165.5
Massachusetts	7.9	145.4
Pennsylvania	7.9	170.6
Virginia	7.9	209.9
Maine	8.0	231.4
New Jersey	8.0	165.8
Rhode Island	8.0	206.7
Connecticut	8.1	158.8
Ohio	8.1	262.3
Delaware	8.2	213.5
Utah	8.2	308.2
Idaho	8.3	264.5
Illinois	8.3	199.0
New York	8.4	102.9
Florida	8.5	168.3
Nevada	8.5	193.2
Michigan	8.6	262.9
Missouri	8.6	234.7
Indiana	9.1	273.9
Washington	9.2	319.2
South Carolina	9.4	355.5
North Carolina	9.5	292.1
Georgia	9.6	351.5
Texas	9.9	296.8
Oklahoma	10.1	280.3
Tennessee	10.1	346.6
California	10.3	283.8
Oregon	10.3	273.4
Alaska	10.4	203.5
Louisiana	10.4	351.7
Arkansas	10.8	324.8
Kentucky	10.9	275.9
Hawaii	11.0	157.5
New Mexico	11.1	184.7
Alabama	11.4	352.9
West Virginia	11.7	248.5
Mississippi	12.3	359.3

## Conclusions

- Weak association of cognitive difficulty with Alzheimer's mortality rate
- Weak association can be due to many reasons including:
  - Cognitive difficulty may not progress to Alzheimer's
  - Not all cognitive difficulty is related to Alzheimer's disease
  - Cognitive difficulty is a much broader category and can include contributing factors such as hearing and visual losses
  - Prevalence-incidence bias

## Future

- Further analysis of risk factors for both cognitive difficulty and Alzheimer's mortality may provide more insights and offer options for interventions
- Analysis of expanded age group

## Limitations

- Cognitive difficulty is a self-reported measure.
- Variation among states may occur in coding deaths certificates for Alzheimer's disease.
- Cognitive difficulty is not age adjusted, possibly skewing association.

### Acknowledgments

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