# Comparison of Subjective Cognitive Decline among Adults in Rhode Island to New England States

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## BACKGROUND

The increasing prevalence of Alzheimer's disease and dementias has resulted in a growing population of aging individuals concerned about changes to their memory and thinking.[1] Subjective cognitive decline (SCD) is often cited as one of the earliest noticeable symptoms of dementia.[2] SCD is defined as a self-reported confusion or memory problem that has been happening more often or getting worse in the past 12 months.[2]

There are modifiable risk factors that may impact cognitive decline. These include health behaviors such as physical inactivity, smoking, and alcohol consumption, and chronic conditions such as obesity, depression, and diabetes.[3] When an individual develops SCD, it can have a significant impact on their overall health and well-being. Experiencing memory loss and confusion disrupts the ability to age independently and complicates the management of co-occurring conditions.[3] Poorly managed comorbidities can further worsen health outcomes, increase healthcare costs, and result in more severe symptoms of cognitive impairment.[4] This paper measures the prevalence of SCD, examines the relationship between SCD and health conditions and behaviors, and provides comparison of Rhode Island to Connecticut, Maine, and Vermont.

## METHODS

Data were obtained from the 2022 Rhode Island Behavioral Risk Factor Surveillance System (BRFSS) and 2022 Centers for Disease Control and Prevention (CDC) BRFSS for Connecticut, Maine, and Vermont.[5] The BRFSS is a state-based telephone survey of adults ≥18 years old and is used to measure risk behaviors and health. Survey data are weighted to obtain state population estimates. See **Table 1** for the unweighted and weighted number of respondents to each state survey.

Massachusetts and New Hampshire were excluded because the SCD module was not included on their 2022 BRFSS state survey. SCD was measured among respondents ≥45 years with the question: "During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?" Respondents who answered "Yes" were classified as having SCD and asked additional questions.

Descriptive analyses were conducted to measure: 1) burden of SCD and its impact on adults in RI, CT, ME, and VT, 2) prevalence of SCD among RI adults by selected demographics, 3) prevalence of health conditions and behaviors among adults with SCD in all four states. Chi-square tests were conducted to test for significant differences between the specified state and RI for module questions and health conditions and behaviors. Demographics assessed included gender, race/ethnicity, age, education level, marital status, and federal poverty level. Health conditions and behaviors analyzed included general health, depression, obesity, diabetes, cardiovascular disease, at least one chronic condition, multiple chronic conditions, deaf or have serious difficulty hearing, physical inactivity, currently smoking, and binge drinking. Obesity was defined as Body Mass Index ≥30. Binge drinking was defined as males having five or more drinks on one occasion, and females having four or more. All analyses were conducted using SAS Version 9.4. Weighted percentages were used for all data figures.

**Table 1.** Number of BRFSS survey respondents by state and age group

| | Unweighted (Weighted) | Age Group | | |
|---|---|---|---|---|
| | | 45–64 years | 64–74 years | 75 years and older |
| Rhode Island | 5,761 (875,711) | 2,047 (270,394) | 1,270 (122,086) | 883 (88,556) |
| Connecticut | 4,831 (2,892,862) | 1,848 (965,257) | 971 (406,245) | 588 (292,095) |
| Maine | 10,646 (1,128,137) | 3,544 (377,782) | 2,737 (192,920) | 2,019 (123,420) |
| Vermont | 8,811 (531,986) | 3,174 (171,814) | 2,151 (87,519) | 1,316 (54,488) |

## RESULTS

In 2022, 12.1% of RI adults experienced confusion or memory loss that was happening more often or getting worse (**Table 2**). Of those who reported SCD in RI, 39.5% reported interference with day-to-day activities, with 31.3% needing assistance with those activities and a majority (86.8%) receiving that help. Additionally, 35.6% reported interference with their ability to work, volunteer, or be social. Less than half (46.3%) reported they or anyone else discussed their difficulties with a healthcare

**Table 2.** Prevalence of adults ≥45 years reporting subjective cognitive decline and impacts

| | Rhode Island | | Connecticut | | Maine | | Vermont | |
|---|---|---|---|---|---|---|---|---|
| | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **Experienced confusion or memory loss that is happening more often or getting worse.** | | | | | | | | |
| Yes | 12.1 | 10.5–13.7 | 11.4 | 9.6–13.1 | **9.9** | 8.9–10.9 | **9.9** | 8.8–10.9 |
| No | 87.9 | 86.3–89.5 | 88.6 | 86.9–90.4 | **90.1** | 89.1–91.1 | **90.2** | 89.1–91.2 |
| **Difficulties interfered with day-to-day activities (e.g., cooking, cleaning, driving)** | | | | | | | | |
| Always, usually, or sometimes | 39.5 | 32.7–46.3 | 31.7 | 25.3–38.2 | 33.0 | 27.5–38.5 | **30.7** | 25.6–35.9 |
| Rarely, never | 60.5 | 53.7–67.3 | 68.3 | 61.8–74.7 | 67.0 | 61.5–72.5 | **69.3** | 64.1–74.4 |
| **Needs assistance with day-to-day activities.** | | | | | | | | |
| Always, usually, or sometimes | 31.3 | 24.9–37.6 | 29.8 | 23.5–36.1 | 26.2 | 21.4–31.0 | **19.8** | 15.9–23.6 |
| Rarely, never | 68.8 | 62.4–75.1 | 70.2 | 63.9–76.5 | 73.8 | 69.0–78.6 | **80.3** | 76.4–84.1 |
| **Able to get help when needed.** | | | | | | | | |
| Always, usually, or sometimes | 86.8 | 79.0–94.6 | * | * | 88.8 | 84.7–92.8 | 79.5 | 71.0–87.9 |
| Rarely, never | 13.2†† | 5.4–21.0 | * | * | 11.3†† | 7.2–15.3 | 20.5†† | 12.1–29.0 |
| **Difficulties interfered with your ability to work, volunteer, or engage in social activities.** | | | | | | | | |
| Always, usually, or sometimes | 35.6 | 29.0–42.3 | 29.8 | 22.5–37.0 | 31.7 | 26.6–36.8 | 28.9 | 24.3–33.5 |
| Rarely, never | 64.4 | 57.7–71.0 | 70.2 | 63.0–77.5 | 68.3 | 63.2–73.4 | 71.1 | 66.5–75.7 |
| **Discussed difficulties with thinking or memory with healthcare provider.** | | | | | | | | |
| Yes | 46.3 | 39.6–53.0 | 40.6 | 33.4–47.7 | 53.6 | 48.4–58.7 | 49.3 | 44.0–54.6 |
| No | 53.7 | 47.0–60.4 | 59.4 | 52.3–66.6 | 46.4 | 41.3–51.6 | 50.7 | 45.4–56.0 |

CI = confidence interval

†† Estimates have low statistical reliability (20.0% < coefficient of variation (CV) <30.0%), caution should be exercised when interpreting.

*Suppressed due to statistical unreliability (CV>30% or small sample size)

Bold values indicate p<0.05, compared to RI.

professional. In comparison to RI, ME and VT had a statistically significantly lower prevalence of adults that experienced SCD in 2022. VT also had significantly lower percents of those with SCD report difficulties with day-to-day activities and needing assistance. No other significant differences were found when comparing the other New England states to RI. Overall, New England had a combined regional SCD prevalence of 11.1%.

SCD was reported more often for RI adults that were Non-white, had less than a high school education, were divorced, separated, or widowed, and were living below 400% of the federal poverty level (**Table 3**). SCD is known to be more prevalent among older adults compared to younger. For RI, adults 75 years and older were more likely to report SCD than adults 45–64 years old, at 16.9% and 12.6% respectively. Demographically, the New England region reflects similarly to characteristics of adults reporting SCD in RI.

There was a significantly high prevalence of RI adults with SCD that also reported having at least one chronic condition (91.4%) and nearly three-quarters that reported having multiple chronic conditions (70.0%) (**Table 4**). Obesity and depression were also highly prevalent among the population experiencing SCD at 41.6% and 45.0%, respectively. Approximately half reported fair or poor health (47.4%) and 44.4% were physically inactive during the past month. In comparison to RI, the prevalence of depression, at least one chronic condition, and multiple chronic conditions were significantly lower in the SCD population in CT, though still highly prevalent. VT adults with SCD had significantly lower prevalence of obesity, cardiovascular disease, and physical inactivity when compared to RI. CT and ME also had significantly lower prevalence of binge drinking. The health conditions and behaviors present in adults with SCD were otherwise similar.

## DISCUSSION

Increasing trends of an aging population are observed throughout New England resulting in the need to identify and address SCD. The data indicate RI had the highest prevalence of SCD among the New England states included in the study, at 12.1%. Approximately one-third of RI adults with SCD reported it impacted their daily life and ability to partake in work, volunteering, and social activities.

The study found significant differences in the prevalence of SCD for ME and VT in comparison to RI, however, the differences were not drastic. As such, it may be beneficial to take a collaborative regional approach to address SCD and associated health conditions and behaviors. Possible avenues for collaboration could include regional learning collaboratives, sharing success stories, strategies, and lessons learned, and regional messaging on SCD, health conditions, risk reduction behaviors, and the importance of discussing concerns with a healthcare provider.

Given that people with SCD are more likely to have multiple co-morbid health conditions, increasing awareness of managing chronic disease and engaging in positive risk reduction behaviors is a necessary public health approach that could be identified through regional learning collaboratives. One example is the Dementia Risk Reduction Regional Learning Collaborative, launched by Alzheimer's

**Table 3.** Prevalence of Rhode Island adults ≥45 years reporting subjective cognitive decline (SCD), by selected demographics

| | SCD | |
|---|---|---|
| | % | 95% CI |
| **Gender** | | |
| Male | 12.2 | 9.7–14.7 |
| Female | 12.0 | 10.0–14.1 |
| **Race, ethnicity** | | |
| NH White | 10.1 | 8.7–11.5 |
| Nonwhite[a] | 19.9 | 14.2–25.5 |
| **Age** | | |
| 45–64 years | 12.6 | 10.2–14.9 |
| 65–74 years | 8.8 | 6.5–11.1 |
| 75 years and older | 16.9 | 12.8–21.0 |
| **Education** | | |
| Less than high school | 21.6† | 14.8–28.4 |
| High school diploma/GED | 14.4 | 10.7–18.2 |
| Some college | 12.4 | 9.5–15.3 |
| Graduated college | 7.1 | 5.7–8.4 |
| **Marital status** | | |
| Married | 10.0 | 7.9–12.2 |
| Divorced, separated, widowed | 15.6 | 12.5–18.6 |
| Never married or unmarried couple | 13.8† | 9.7–18.0 |
| **Federal poverty level** | | |
| At or above 400% FPL | 7.4 | 5.5–9.3 |
| Below 400% FPL | 15.4 | 12.7–18.1 |

a Nonwhite includes Hispanic, African American, Asian, American Indian or Alaska Native, Native Hawaiian or Pacific Islander, and Other race.

† Estimates may be of limited statistical reliability due to a high coefficient of variation (CV), 15.0% < CV <20.0%.

**Table 4.** Health conditions and behaviors among adults ≥45 years reporting subjective cognitive decline

| | Rhode Island | | Connecticut | | Maine | | Vermont | |
|---|---|---|---|---|---|---|---|---|
| | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| **General health** | | | | | | | | |
| Good or better health | 52.6 | 45.4–59.7 | 61.1 | 53.3–69.0 | 53.3 | 47.8–58.7 | 54.3 | 48.8–59.9 |
| Fair or poor health | 47.4 | 40.3–54.6 | 38.9 | 31.0–46.7 | 46.7 | 41.3–52.2 | 45.7 | 40.1–51.2 |
| **Depression** | | | | | | | | |
| Yes | 45.0 | 37.9–52.0 | **34.1** | 26.9–41.4 | 50.0 | 44.6–55.5 | 50.2 | 44.7–55.8 |
| No | 55.0 | 48.0–62.1 | **65.9** | 58.6–73.1 | 50.0 | 44.5–55.5 | 49.8 | 44.2–55.3 |
| **Obesity** | | | | | | | | |
| Yes | 41.6 | 34.3–48.9 | 38.2 | 30.0–46.4 | 38.6 | 33.2–44.0 | **32.0** | 26.7–37.2 |
| No | 58.4 | 51.1–65.7 | 61.8 | 53.6–70.0 | 61.4 | 56.0–66.9 | **68.1** | 62.8–73.3 |
| **Diabetes** | | | | | | | | |
| Yes | 27.7 | 21.3–34.1 | 21.4 | 15.4–27.3 | 26.2 | 21.1–31.2 | 19.2 | 15.0–23.4 |
| No | 69.4 | 63.0–75.9 | 75.6 | 69.2–81.9 | 70.7 | 65.5–75.8 | 78.3 | 73.9–82.7 |
| **Cardiovascular disease**[a] | | | | | | | | |
| Yes | 31.5 | 24.8–38.2 | 24.8† | 16.7–32.9 | 27.2 | 22.5–32.0 | **23.2** | 18.8–27.5 |
| No | 68.5 | 61.8–75.2 | 75.2 | 67.1–83.3 | 72.8 | 68.0–77.5 | **76.9** | 72.5–81.2 |
| **At least one chronic condition**[b] | | | | | | | | |
| Yes | 91.4 | 88.0–94.8 | **84.3** | 78.7–89.9 | 89.1 | 85.7–92.4 | 88.9 | 85.8–91.9 |
| No | 8.6† | 5.2–12.0 | **15.7†** | 10.1–21.3 | 10.9† | 7.6–14.3 | 11.2 | 8.1–14.2 |
| **Two or more chronic conditions** | | | | | | | | |
| Yes | 70.0 | 64.0–75.9 | **58.4** | 50.6–66.3 | 68.9 | 64.2–73.6 | 63.4 | 58.0–68.8 |
| No | 30.0 | 24.1–36.0 | **41.6** | 33.7–49.4 | 31.1 | 26.4–35.8 | 36.6 | 31.2–42.0 |
| **Deaf or serious difficulty hearing** | | | | | | | | |
| Yes | 23.3† | 16.3–30.4 | 17.4† | 11.4–23.3 | 24.1 | 19.8–28.4 | 20.2 | 16.2–24.3 |
| No | 76.7 | 69.6–83.8 | 82.6 | 76.7–88.6 | 75.9 | 71.6–80.2 | 79.8 | 75.7–83.8 |
| **Physical inactivity** | | | | | | | | |
| Yes | 44.4 | 37.4–51.3 | 43.7 | 35.4–52.0 | 43.3 | 37.8–48.8 | **30.4** | 25.4–35.5 |
| No | 55.7 | 48.7–62.6 | 56.3 | 48.0–64.6 | 56.7 | 51.2–62.2 | **69.6** | 64.5–74.6 |
| **Currently smoking** | | | | | | | | |
| Yes | 19.6† | 12.6–26.7 | 17.1†† | 9.8–24.5 | 23.1 | 17.5–28.7 | 14.4 | 10.3–18.5 |
| No | 80.4 | 73.4–87.4 | 82.9 | 75.5–90.2 | 76.9 | 71.3–82.5 | 85.6 | 81.5–89.7 |
| **Binge drinking** | | | | | | | | |
| Yes | 16.7† | 10.2–23.1 | **7.4††** | 4.1–10.7 | **8.2†** | 5.6–10.8 | 11.7 | 8.4–15.0 |
| No | 83.4 | 76.9–89.8 | **92.6** | 89.3–95.9 | **91.8** | 89.2–94.4 | 88.3 | 85.0–91.6 |

a includes angina or heart disease, heart attack, and stroke

b includes asthma, arthritis, cancer, cardiovascular disease, copd, depression, diabetes, or kidney disease.

† Estimates may be of limited statistical reliability due to a high coefficient of variation (CV), 15.0% < CV < 20.0%.

†† Estimates have low statistical reliability (20.0% < CV < 30.0%), caution should be exercised when interpreting.

Bold values indicate p<0.05, compared to RI.

Associations Center of Excellence on Dementia Risk Reduction, with the goal of convening public health experts to identify dementia risk reduction behaviors and consider actionable activities for communities to implement.

For all states, there was a significant percent of adults with SCD that did not discuss concerns with a healthcare professional. Education should be provided to healthcare professionals to increase routine discussions on memory loss and confusion, cognitive screenings, and cognitive assessments. The public should also be educated on cognitive decline to increase awareness on the signs and encourage discussing concerns with a healthcare professional. Education could result in early detection of cognitive decline which is important for effective management and improved quality of life. In addition, early detection allows the individual to make informed decisions regarding their health, develop advance directives, establish end-of-life wishes, and identify needs for caregiver support.[6] Increasing discussions and awareness of cognitive decline could also address stigma and shame associated with memory loss.

The New England region had a similar prevalence of SCD when compared nationally to other regions. All of the regions – New England, South, West, and Midwest – had a prevalence between 10.6% to 11.6%. The only states that had prevalences higher than RI were Arizona (15.2%), Nevada (13.4%), and Oregon (12.4%). Similarities in prevalences throughout the regions suggest the need for nationwide public health interventions to address SCD.

This study has several limitations. First, data are self-reported and subject to recall and social desirability bias. Second, the study cannot establish causality. Third, SCD was based on the respondents' subjective decline in cognitive function, not clinical assessment. Additionally, the data does not include adults in institutionalized settings, such as nursing homes and care facilities, which may result in an underestimate of adults with SCD. Also, the samples sizes for adults reporting SCD and certain health conditions and behaviors were small, which may result in few significant differences. Lastly, MA and NH were not included, so comparisons were not available to all of New England. We recommend that all New England states fund the cognitive decline module in the same years going forward to allow for additional investigations with all six states.

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