



Regional Variation in U.S. Dementia Trends and Race/Ethnic Disparities in Cognitive Impairment and Dementia

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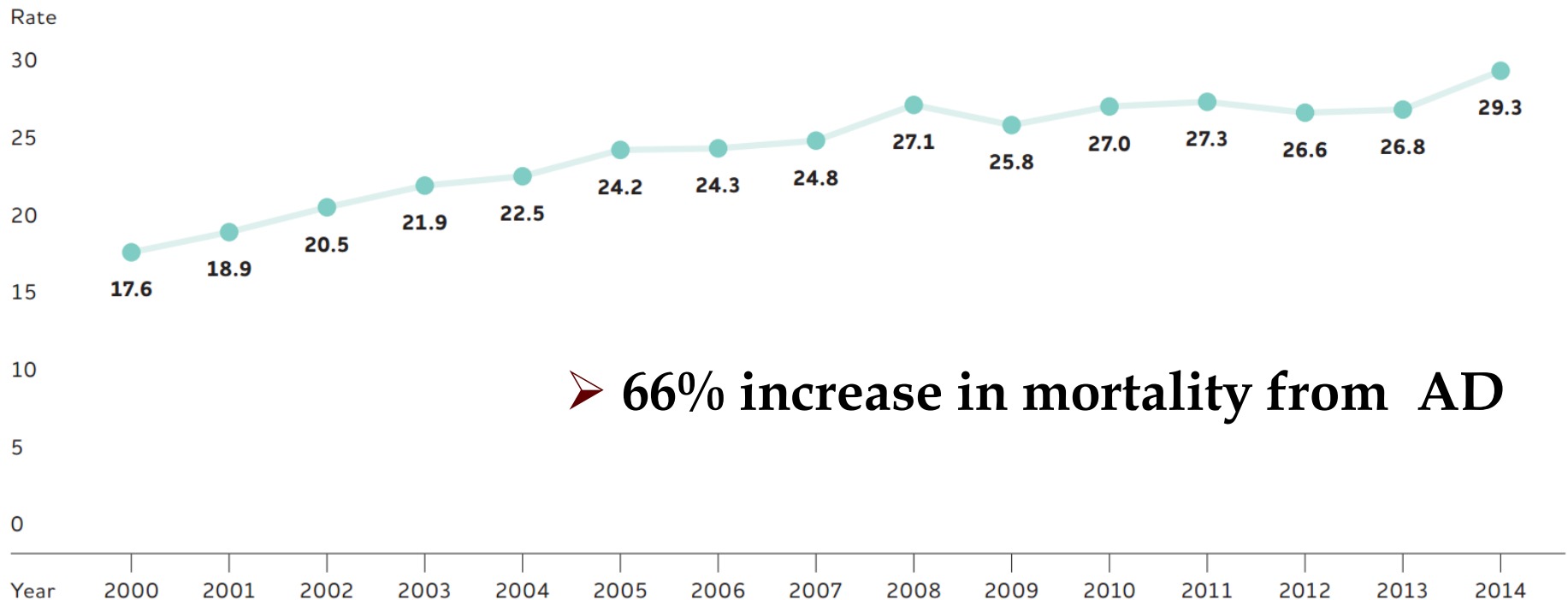
REVES Annual Meeting
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Alzheimer's Disease & Related Dementias (ADRD)

Looming Public Health Crisis

- Alzheimer's disease (AD) only leading cause of death that cannot be prevented, substantially slowed, or cured.

U.S. Annual Alzheimer's Death Rate (per 100,000 People) by Year



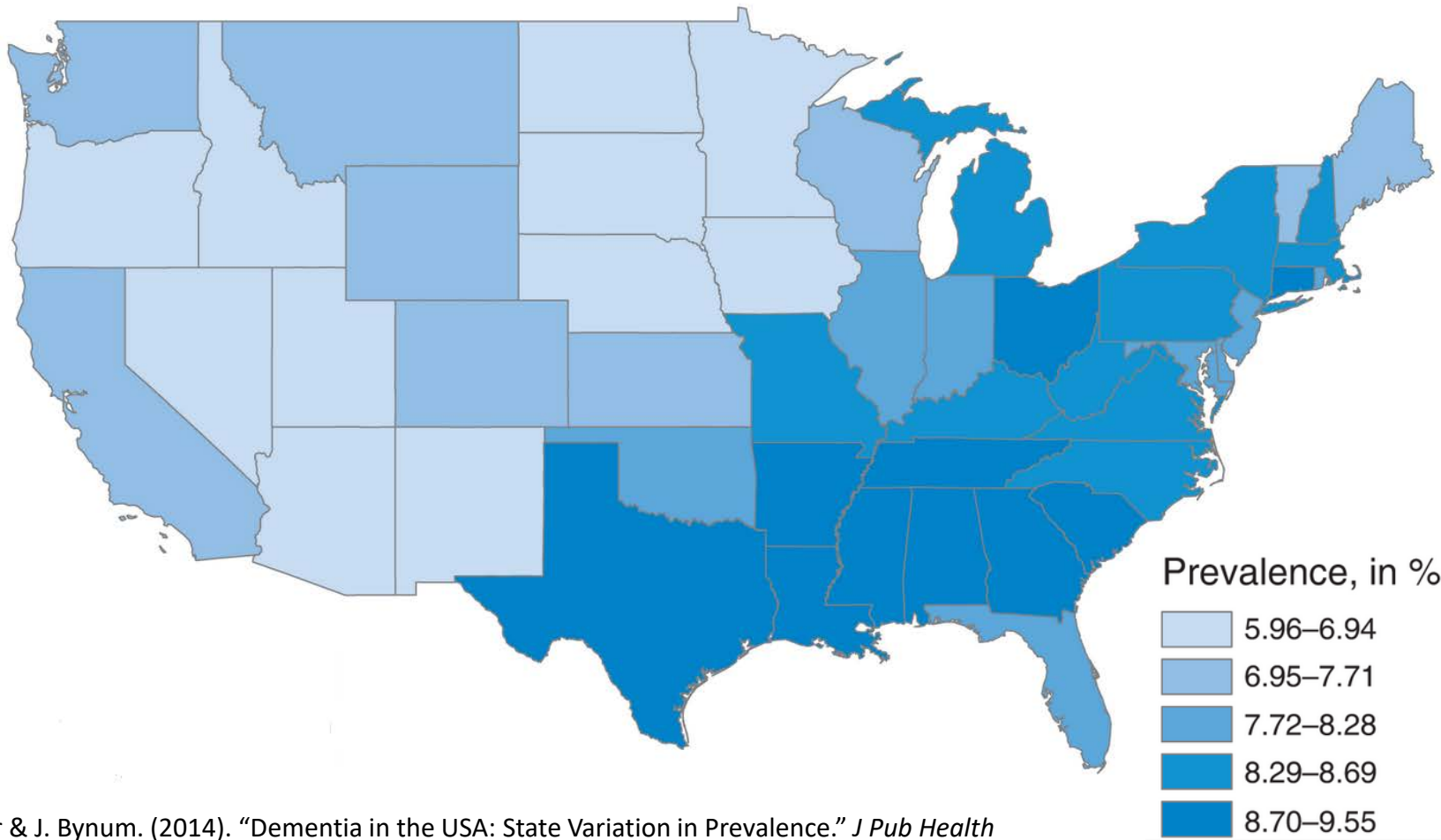
Dementia Trends

- U.S. dementia prevalence among adults 65+ has decreased, from 11.6% in 2000 to 8.8% in 2012 (Langa et al. 2017)
- Evidence of decline in dementia among 65+ population:
 - **UK** (Matthews et al. 2013 - CFAS)
 - **Spain** (Lobo et al. 2007 - ZARADEMP)
 - **Germany** (Doblhammer, Fink, Fritz 2015 - Ins Claims)
- Evidence of increasing dementia:
 - **Japan** (Dodge et al. 2012; Ohara et al. 2017)

U.S. Regional Variation in Dementia Prevalence

Prevalence of Dementia

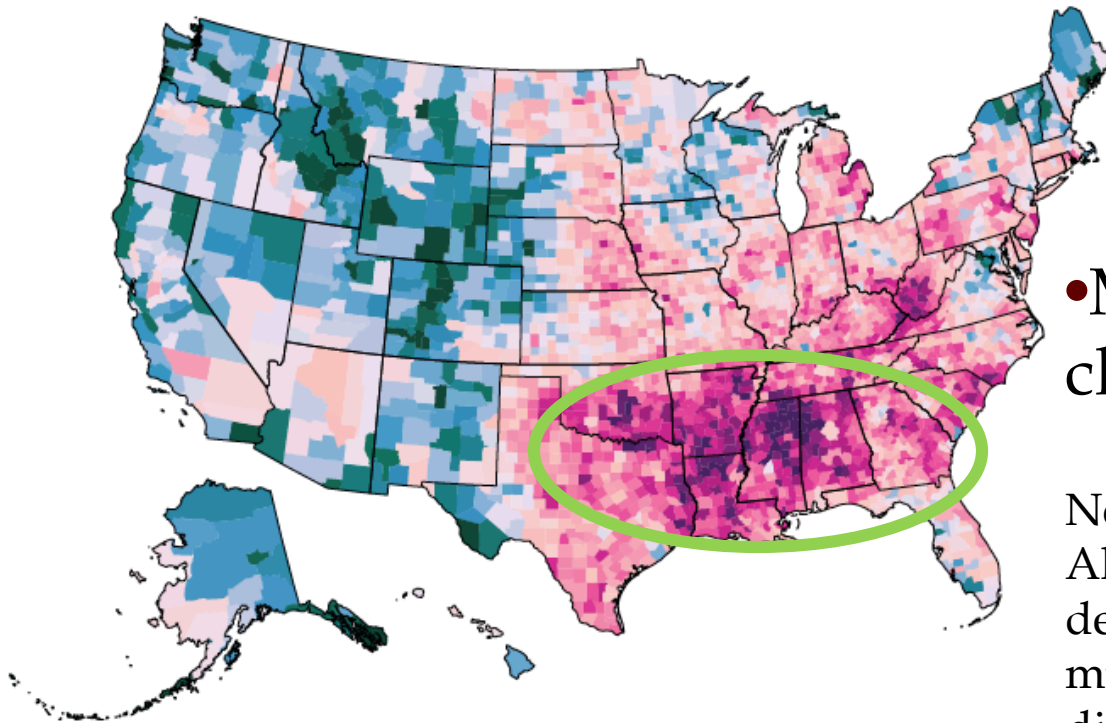
Based on 20% of the Medicare Population, 2008
age-sex standardized to the U.S. Population (Census 2010)



Source: D. Koller & J. Bynum. (2014). "Dementia in the USA: State Variation in Prevalence." *J Pub Health*

ADRD Mortality is Geographically Patterned

Percent change in age-standardized mortality rate
from neurological disorders between 1980 and 2014, both sexes



- Mortality increase clustered in southern states

Neurological disorders include:
Alzheimer disease and related
dementias; Parkinson disease; epilepsy;
multiple sclerosis; motor neuron
disease.

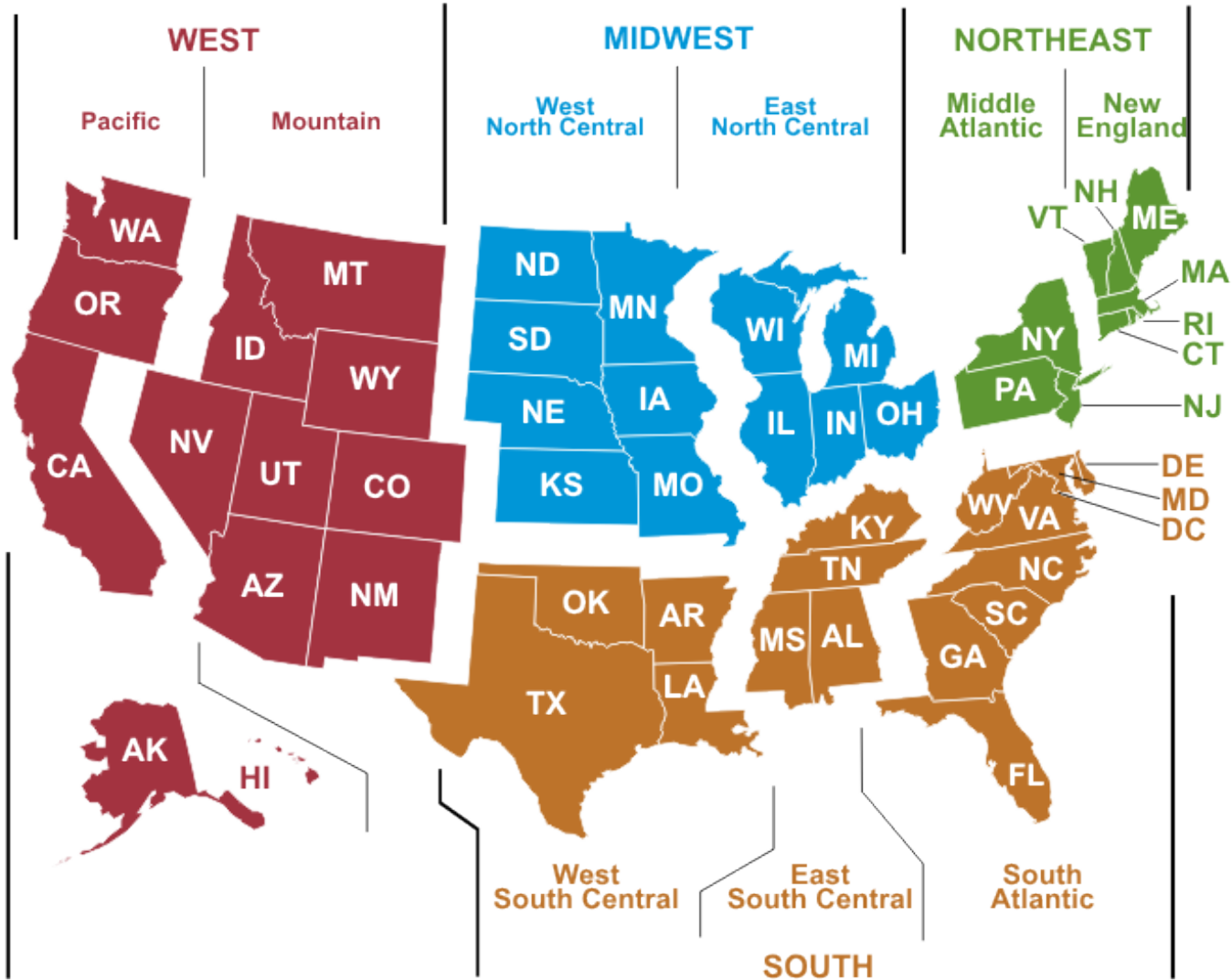
% Change



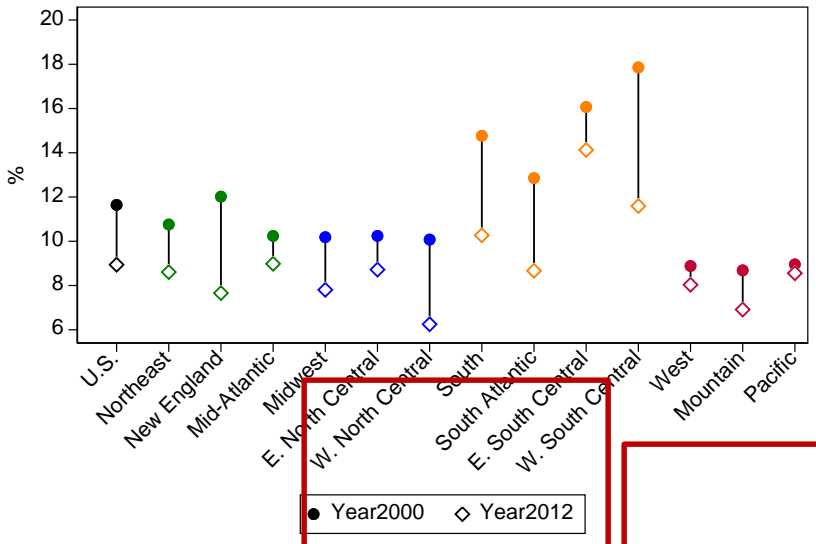
Data & Methods

- U.S. Health and Retirement Study; Ages 65+
- Dementia classification from cognitive assessment OR proxy/interviewer assessment of cognitive and physical function
- Census region (division) at time of interview
- Pooled logistic regression (cluster adj. std. error)
 - N = 21,054 person-wave observations
 - About 1/3 65+ in 2000 are 77+ in 2012
 - Numbers weighted for complex survey design
 - 2012 numbers age and sex standardized to 2000

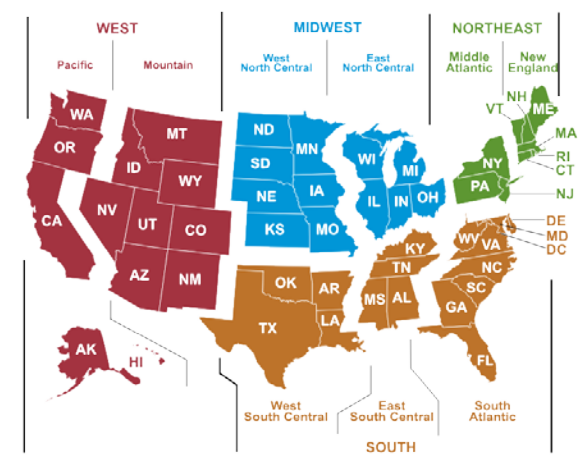
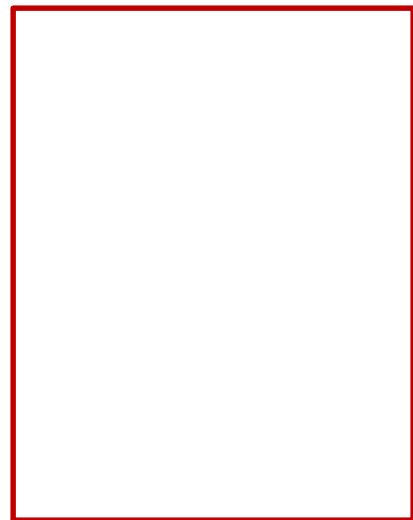
U.S. Regions and Sub-Divisions



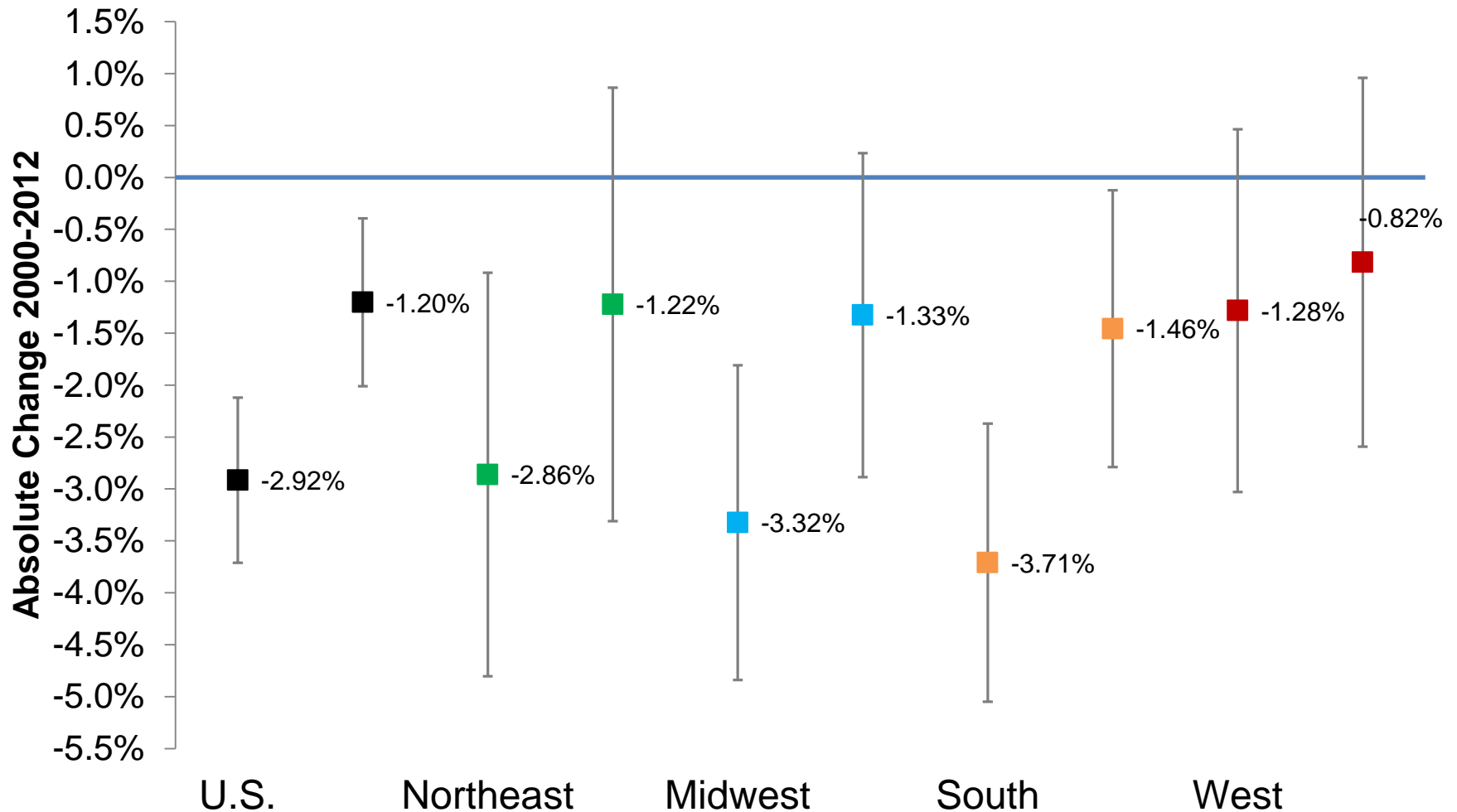
Dementia Prevalence 2000-2012: HRS Ages 65+



● Year2000 ◇ Year2012



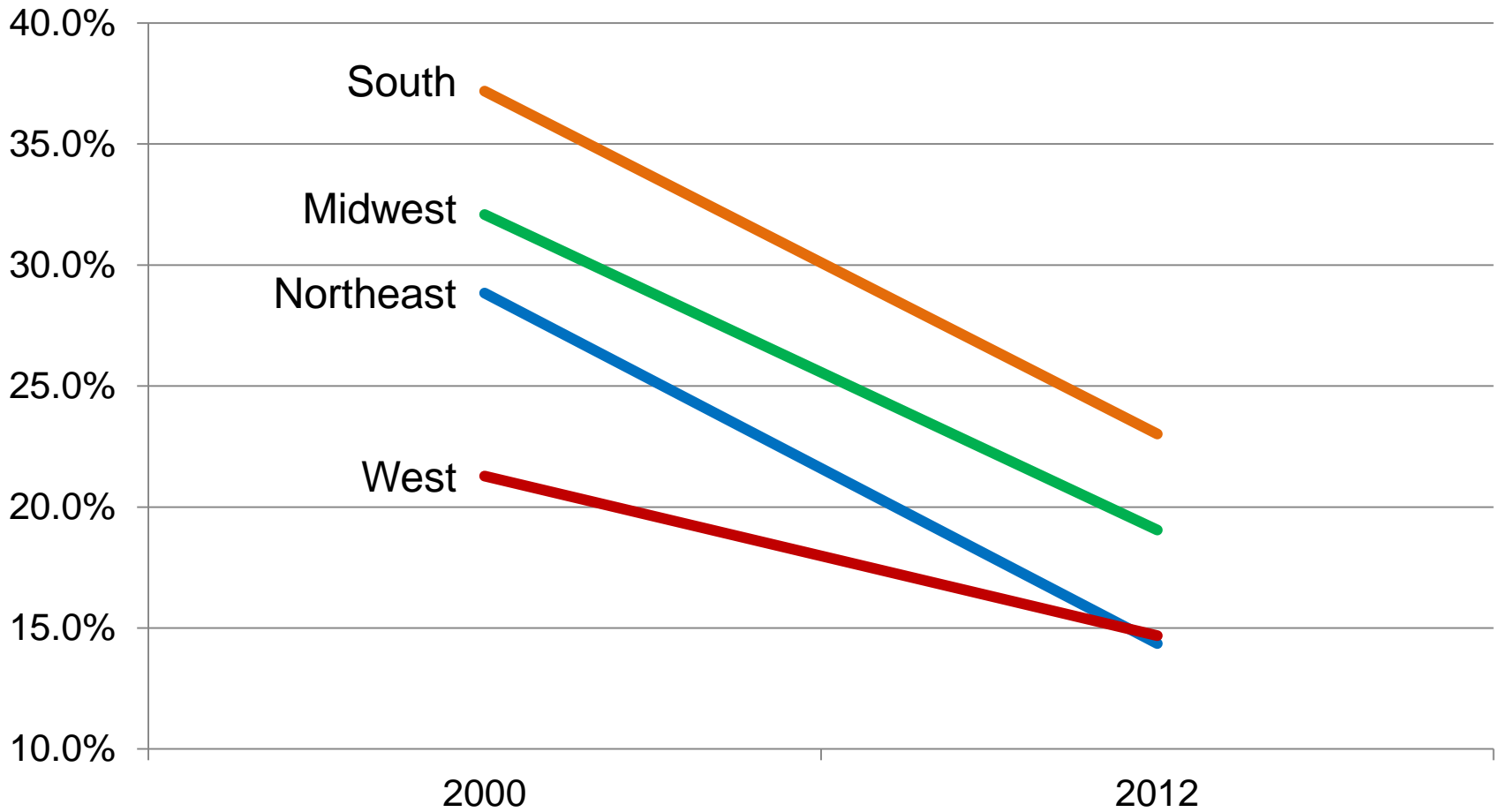
Decline in Dementia from 2000-2012: U.S. Regions



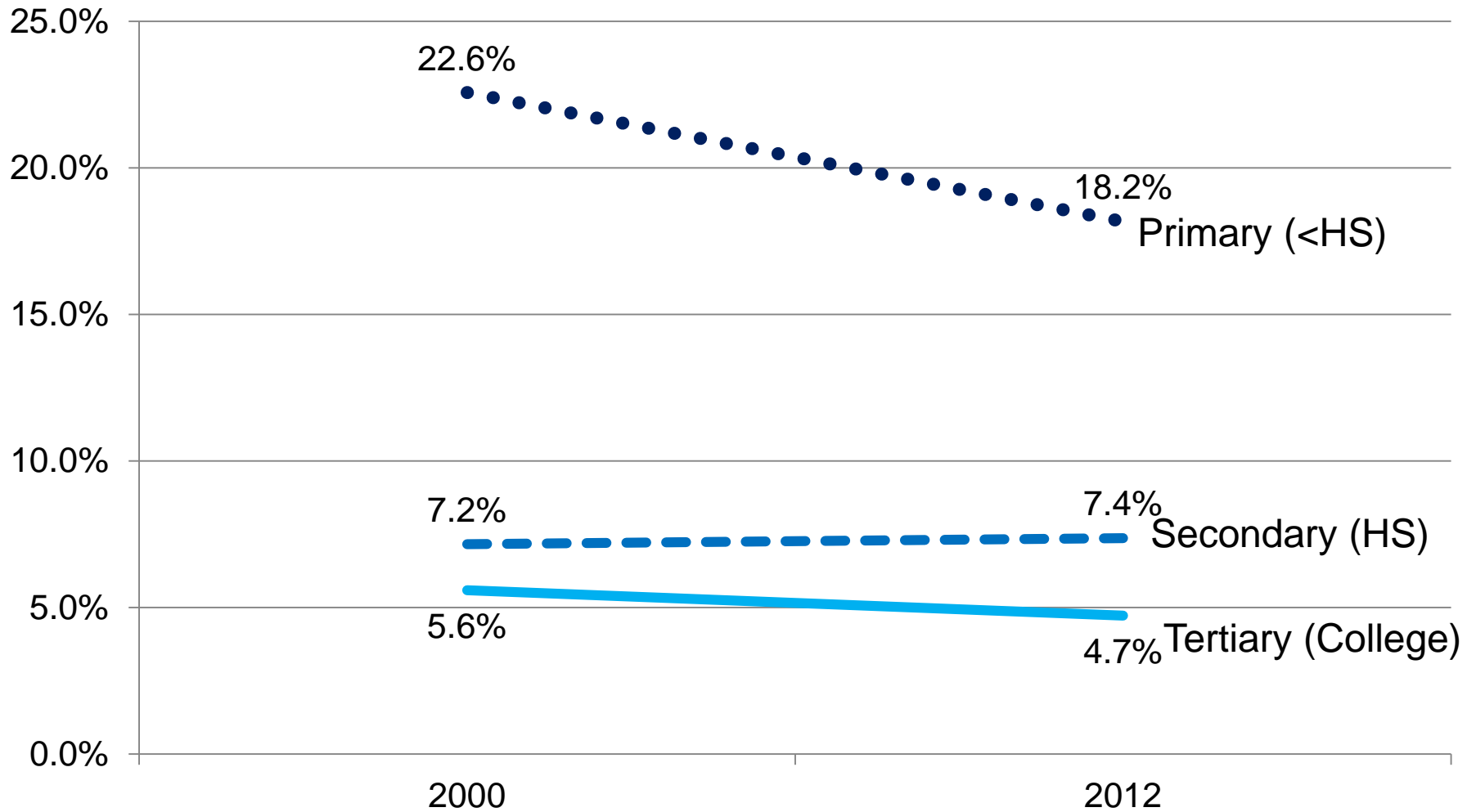
Model 1: age, sex

Model 2: age, sex, race, education, wealth, high bp, heart disease, diabetes, stroke, bmi, smoking status

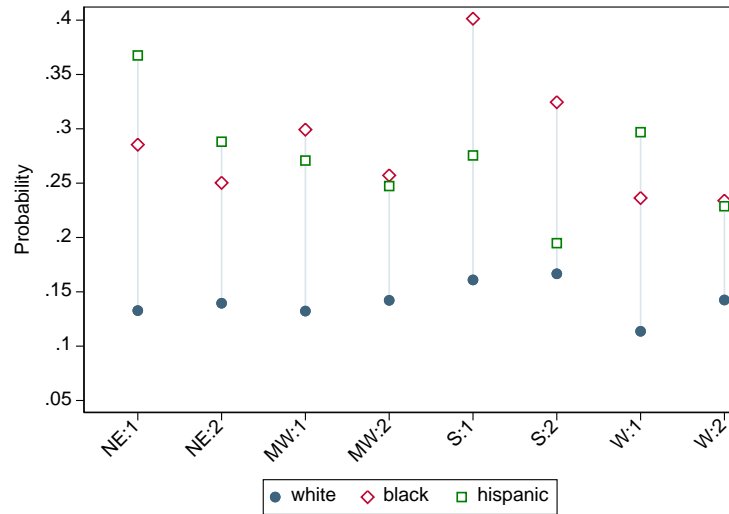
Changing Prevalence of Low Education (<HS)



Changing Prevalence of Dementia by Education

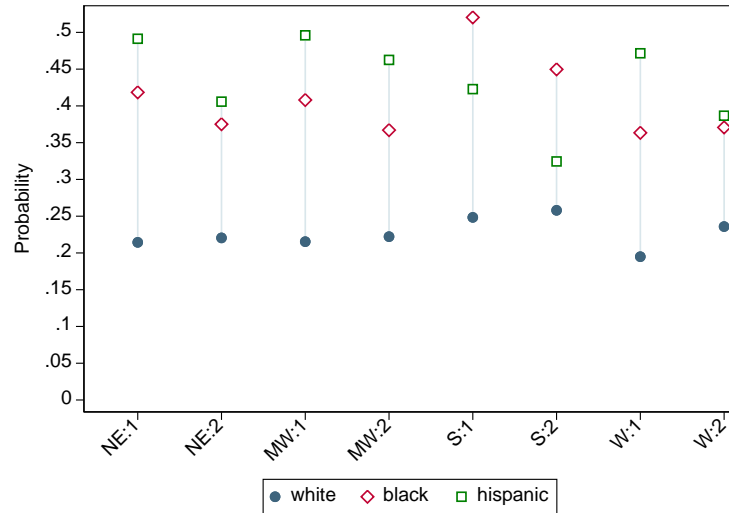


R/E Differences in Dementia (2000-2004) by Region



Model 1: age, sex Model 2: age, sex, foreign born status, education

R/E Differences in CIND (2000-2004) by Region



Model 1: age, sex Model 2: age, sex, foreign born status, education

Conclusions

- **Decline in dementia prevalence was variable across (and within) region**
- **Possible Explanations:**
 - 1) Increasing educational attainment**
 - 2) Improved lives of those with lowest attainment**
- **Geographic variation in racial and ethnic differences in prevalence of cognitive impairment and dementia**
 - **Hispanics have highest prevalence in New England and Mountain states (dementia) and Midwest (CIND)**
 - **Blacks have highest prevalence in the South**