Trends in Cognitively Healthy and Cognitively Impaired Life Expectancy in the United States: 2000 - 2010

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1. How have the prevalence of dementia, cognitive loss without dementia, and normal cognition changed in the older population in recent years?
2. How does this interact with changes in life expectancy to affect the length of cognitively healthy life?

- With increasing life expectancy at ages when incurable - chronic conditions dominate we have seen increases in the prevalence and length of life spent with many diseases.
- Is this true for cognition?

Cognition in the Health and Retirement Study

- Nationally representative longitudinal sample with data collection every 2 years beginning in 1992 which Includes the institutional population
- Approximately – 20,000 + at each interview
- Defining Dementia in the HRS – based on special sample of about 1,000 (ADAMS) who received a Neuropsych exam
  - Equipercentile Equating
  - Define cut-points on HRS cognitive (and other) measures that result in similar dementia prevalence estimates as the "gold-standard" ADAMS estimates

Defining Dementia in HRS

- Self-respondents: 27-point cognitive scale cognitive based on performance
  - a ten item immediate word recall (short term memory)
  - a ten item delayed word recall (longer-term memory)
  - a five item serial 7s working memory task
  - Backward counting, score (0-2)

- Demented (0-6), CIND (7-11), or healthy (12-27).

- Proxy-respondents:
  - 1) proxy assessment of memory;
  - 2) proxy assessment of IADL limitations; and
  - 3) interviewer assessment of cognitive impairment
  - 11-point combined scale

- We use data from 2000 and 2010 and estimate age-gender- specific cognitive status for those 65+
- Estimate Life expectancy: With good cognitive functioning, with CIND, with Dementia
- We do this for the total population and for three educational groups: high , medium, low

Data and Method

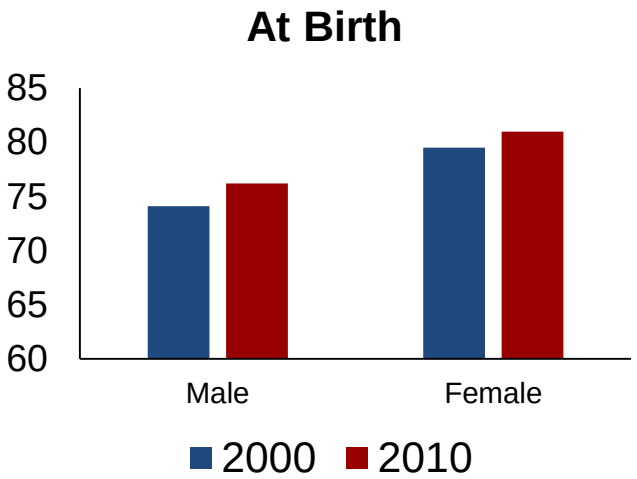
Mortality Data

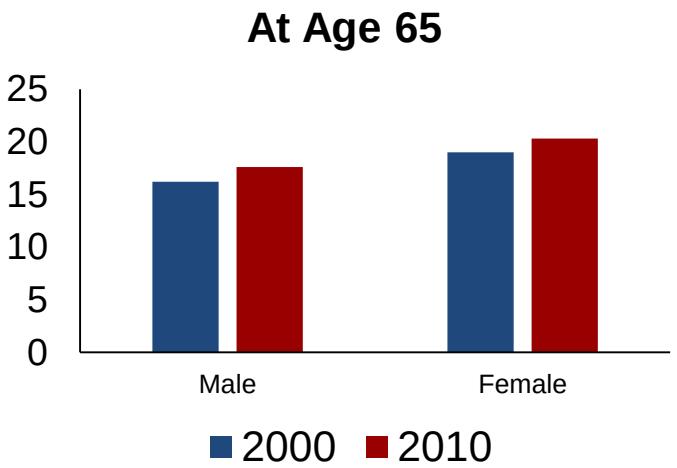
- U.S. vital statistics decennial life table 2000; the annual life table for 2010.
- For educational groups we use HRS mortality estimated from the 4 year periods after the survey

Method

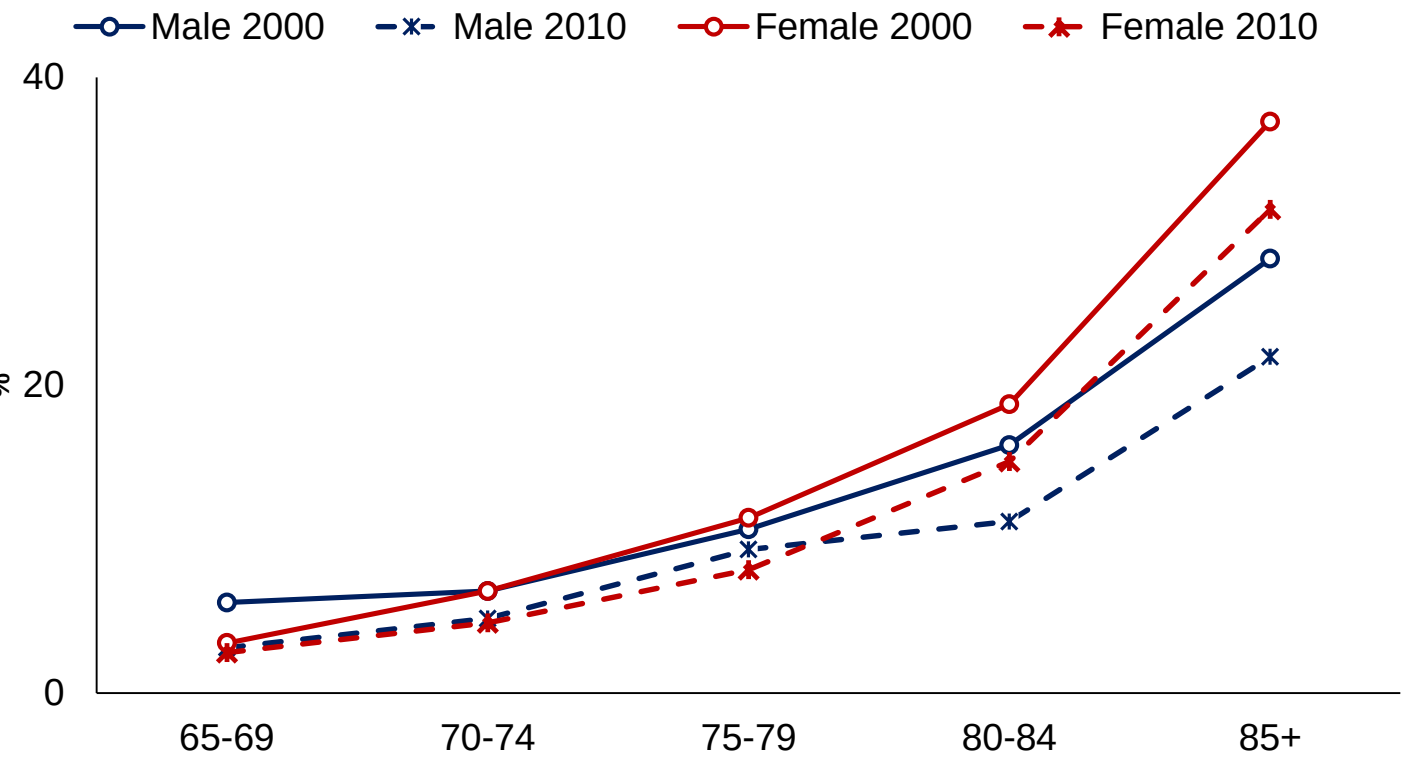
- Sullivan method – Distributes years lived into states of health using the prevalence of health states and then divides total life expectancy into states.

Life Expectancy 2000- 2010: Increases but less for women

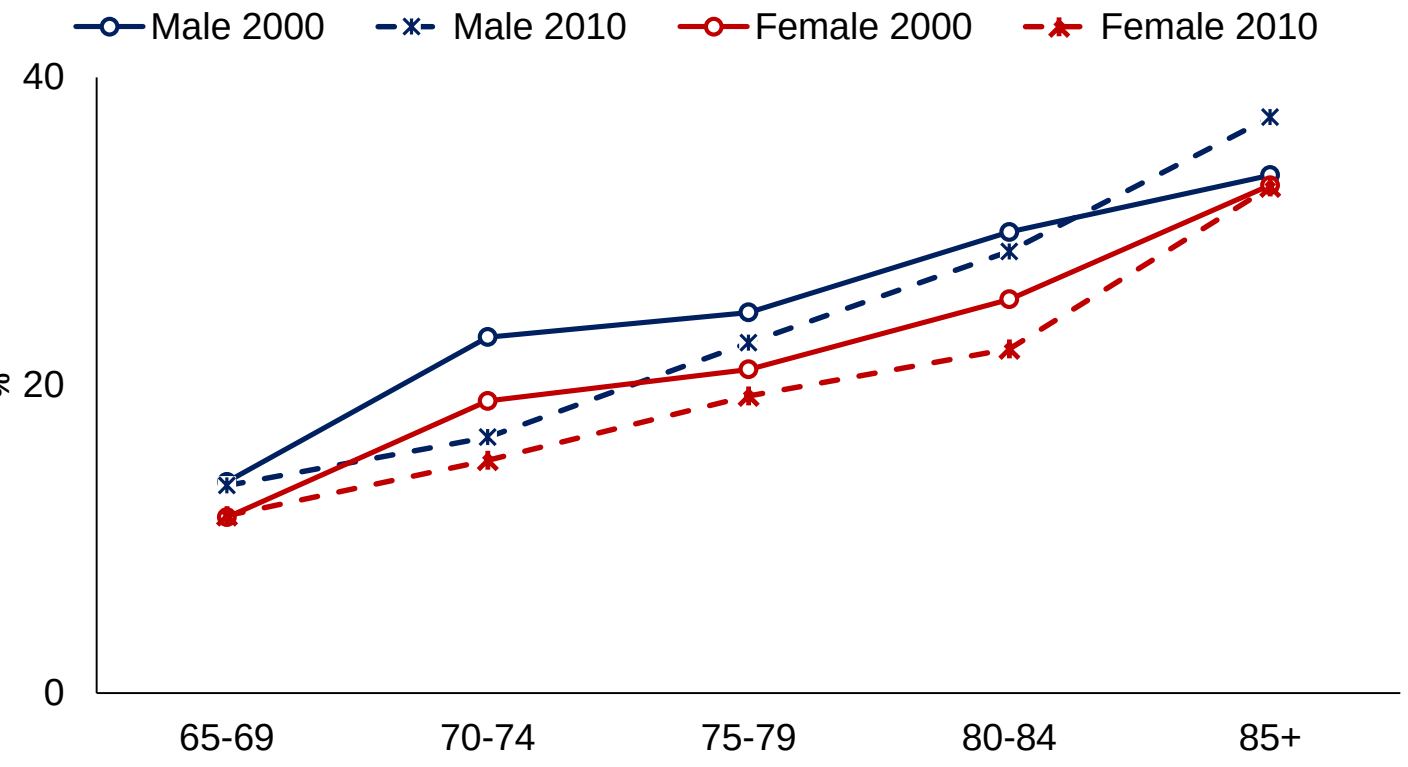




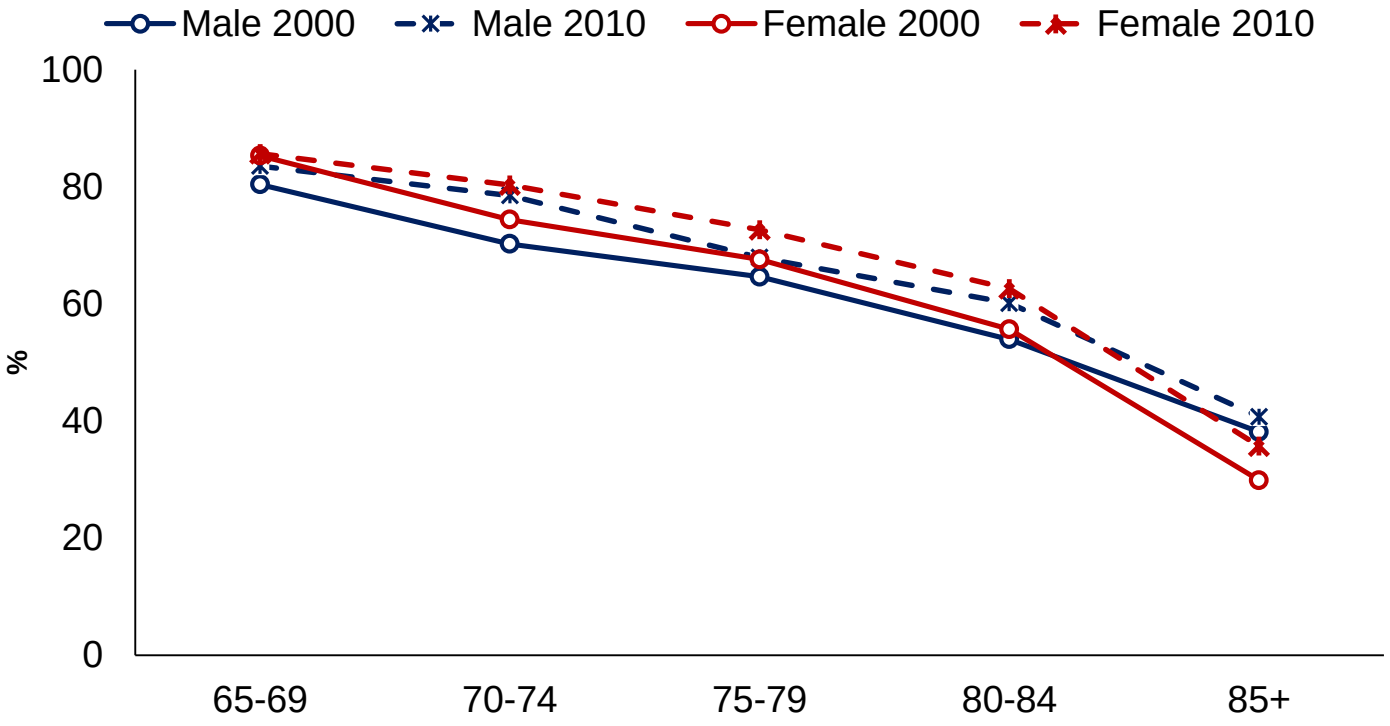
% With Dementia decreases



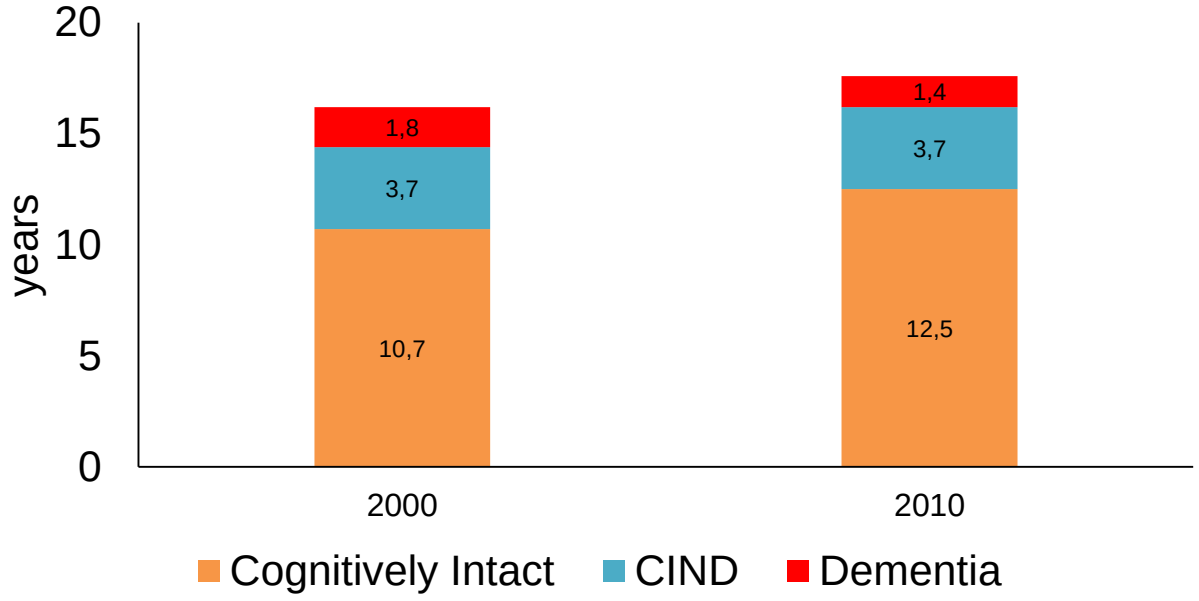
% With Cognitive Impairment No Dementia



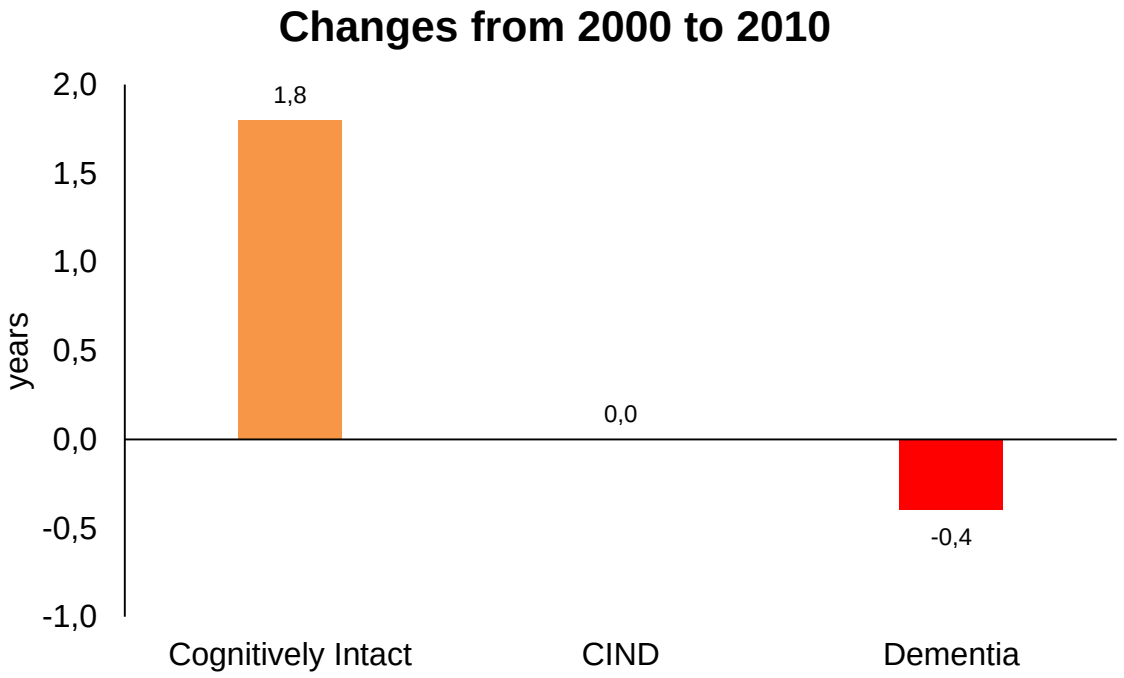
% With Good Cognition Increases



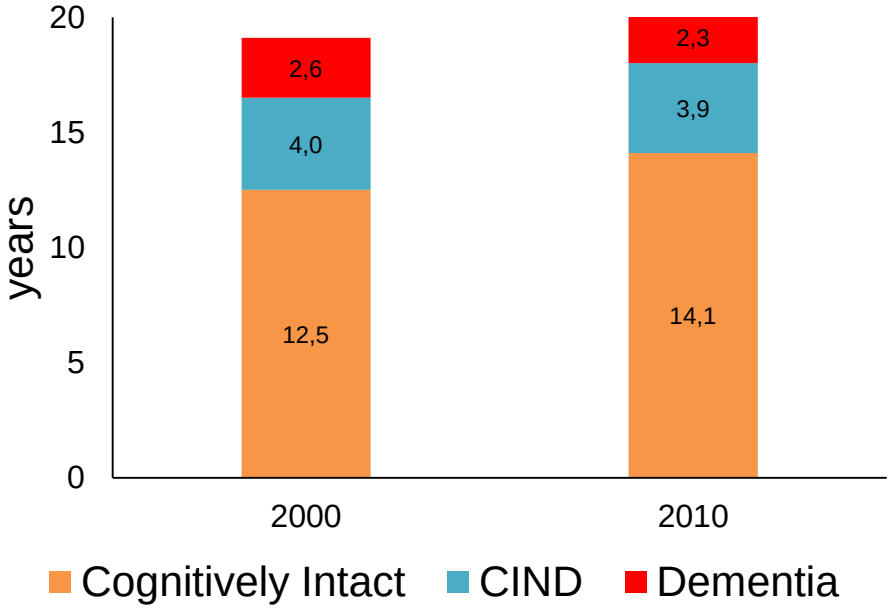
Male Life Expectancy at age 65: Cognitively intact, with CIND, with dementia



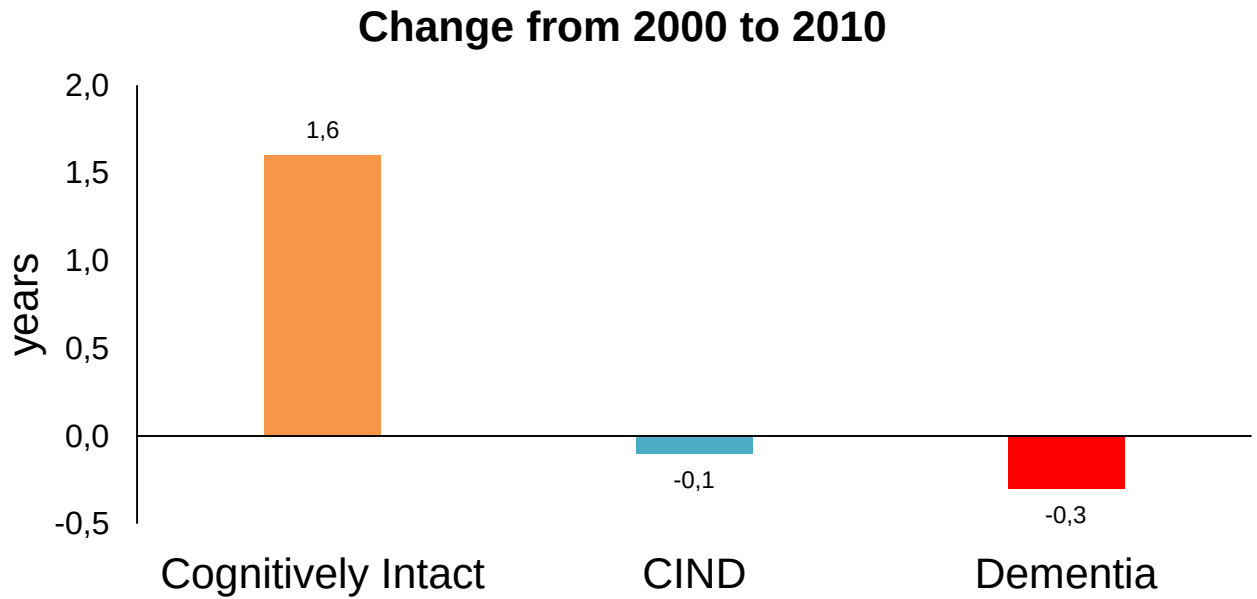
Change in Male Life Expectancy at age 65: Cognitively intact, with CIND, with dementia



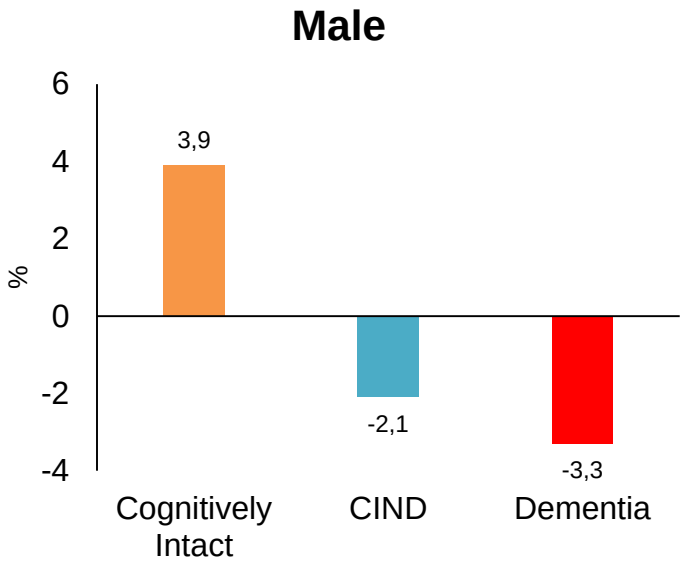
Female Life Expectancy at age 65: Cognitively intact, with CIND, with dementia

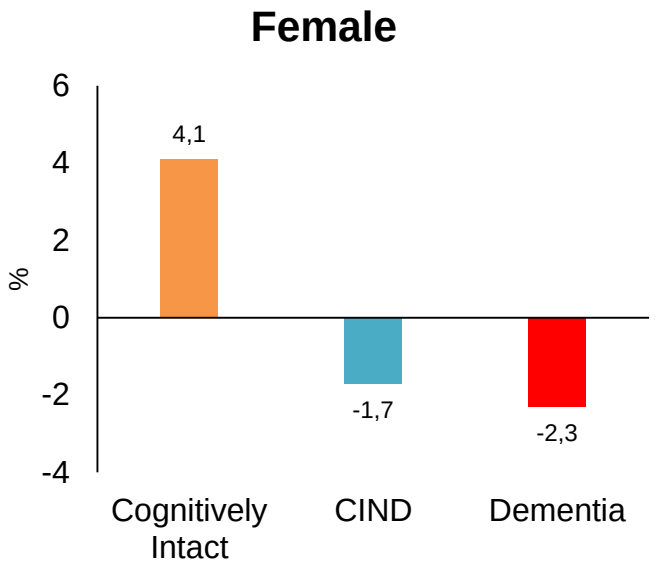


Change in Female Life Expectancy at age 65: Cognitively intact, with CIND, with dementia



Changes in Proportion of Life at age 65 with and without cognitive problems from 2000 to 2010





Conclusions for total population:

Compression of life expectancy with dementia

Decrease in absolute and relative years with cognitive problems

Extension of cognitively healthy life expectancy

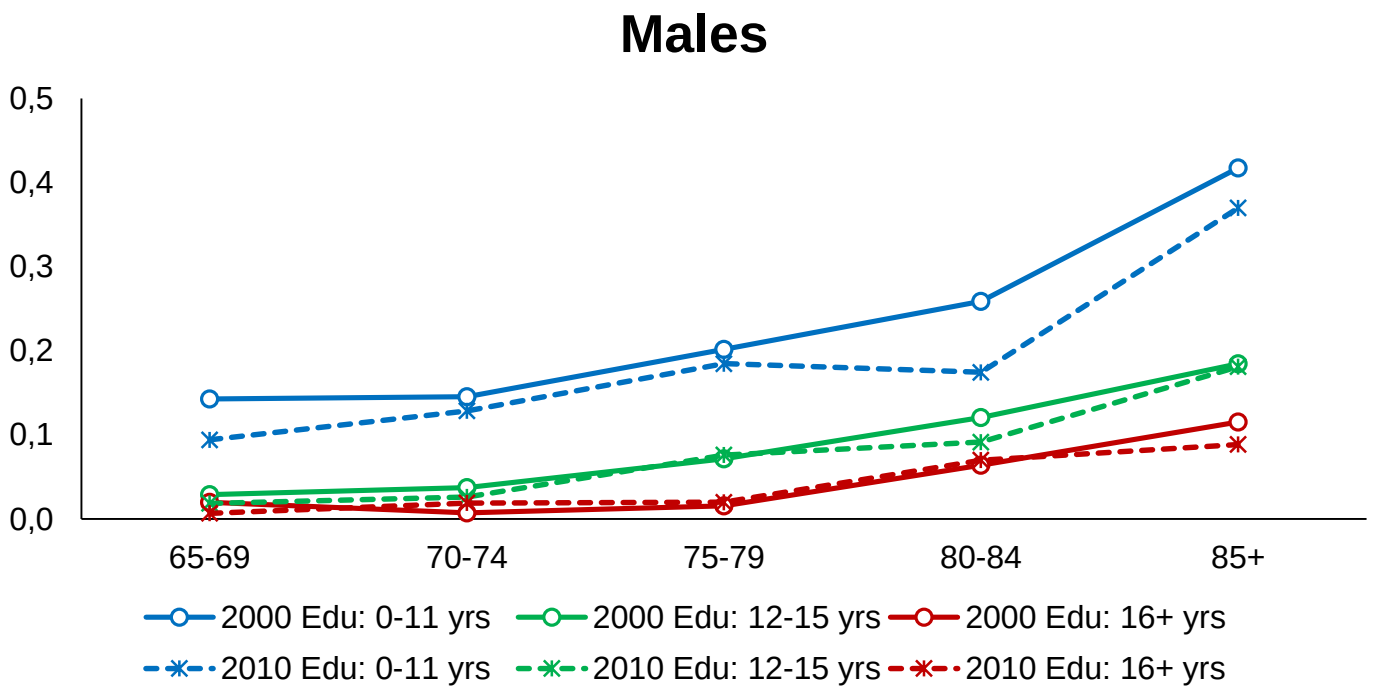
Did this characterize Americans of all socioeconomic groups?

Education.

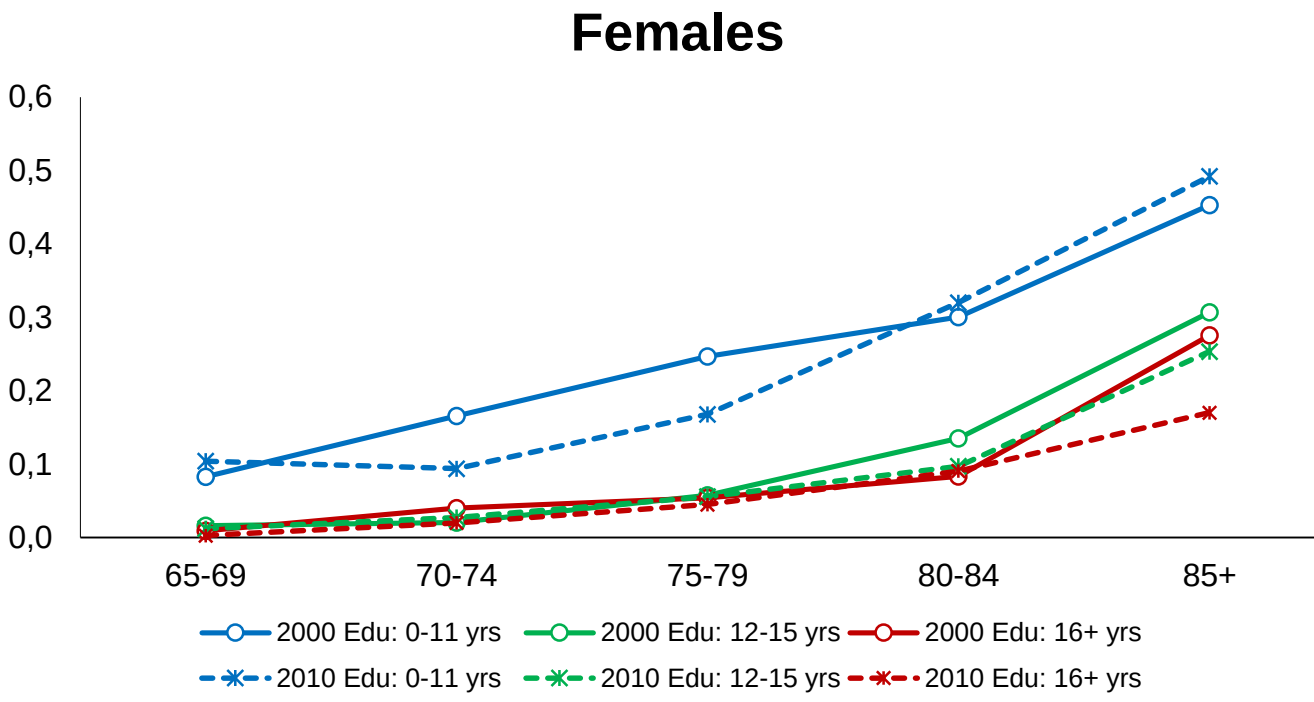
HIGH –	16+ years
Medium –	12-15 years
Low –	0-11 years

We use the Health and Retirement Study to estimate life expectancy for education groups.

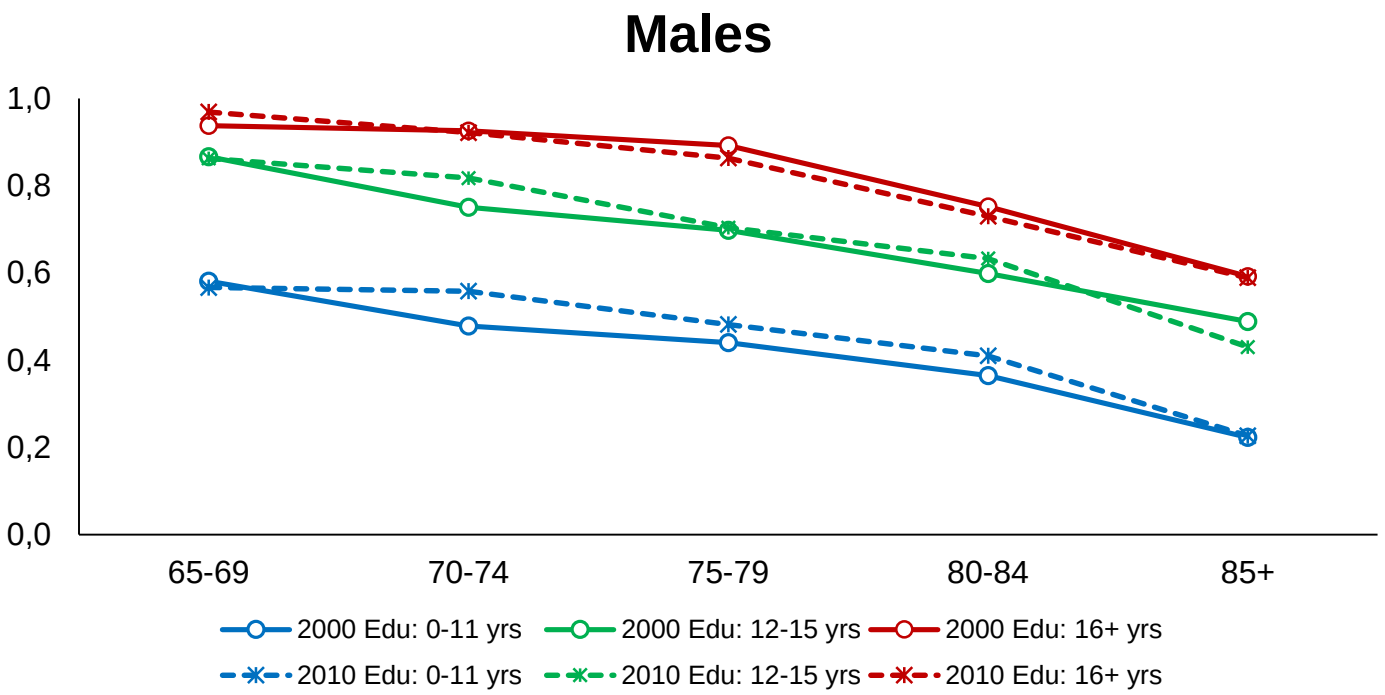
% with Dementia by Education in 2000 and 2010: Decreases among those with lowest education



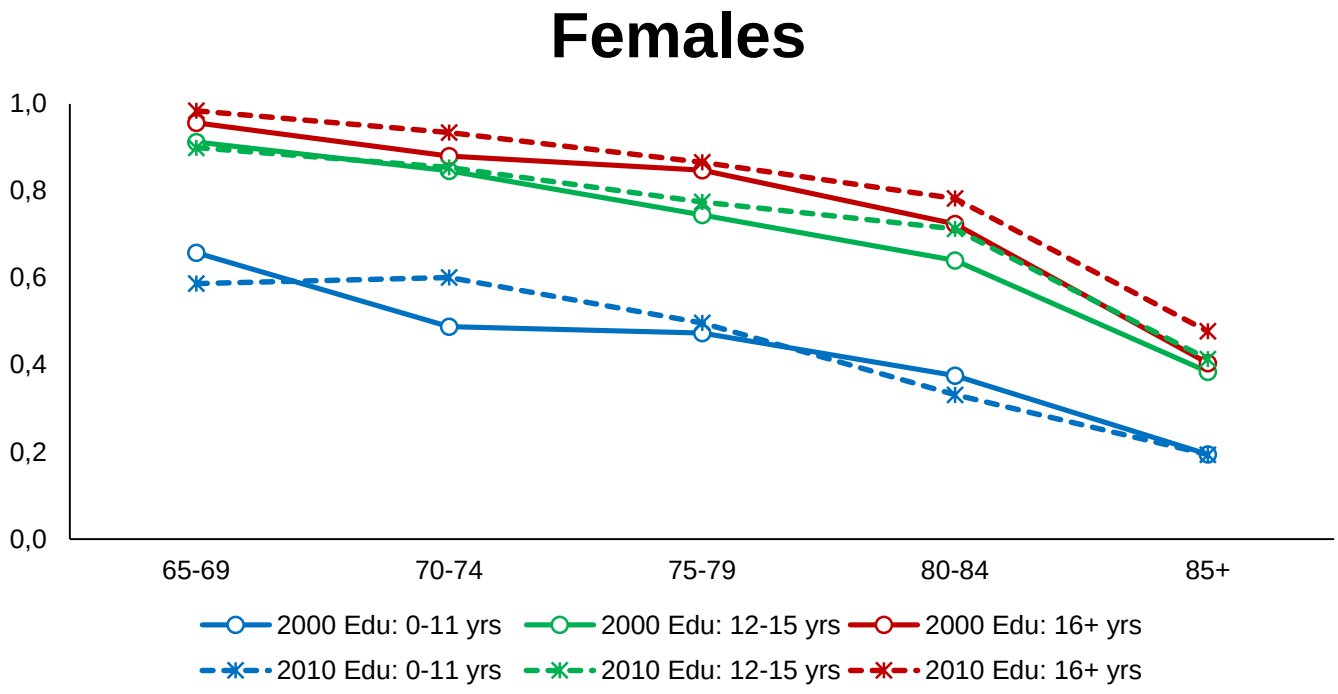
% with Dementia by Education in 2000 and 2010: Decreases all education groups at some ages



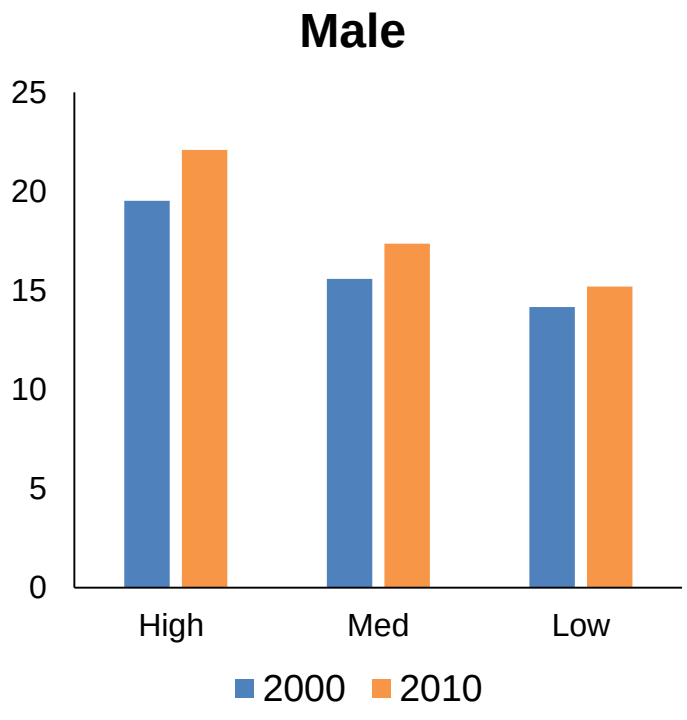
% with Good Cognition by Education in 2000 and 2010: Increases among the lowest group

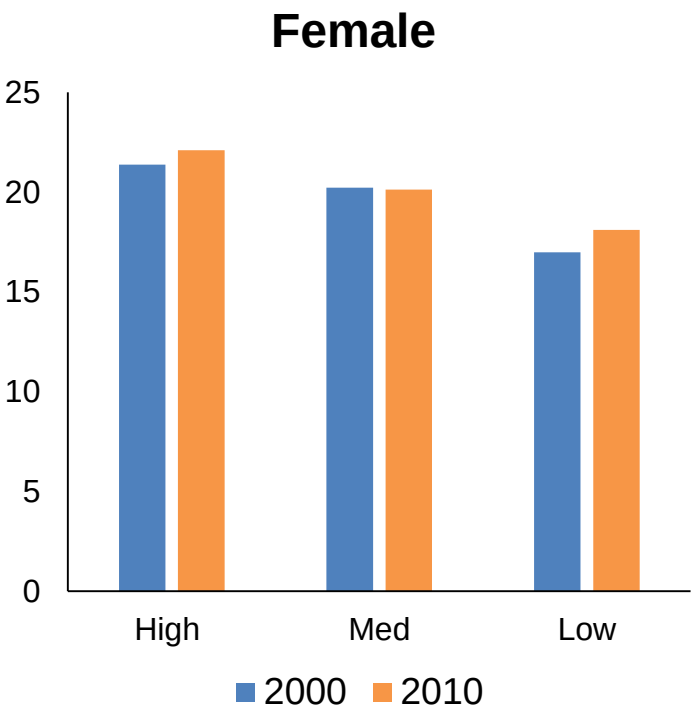


% with Good Cognition by Education in 2000 and 2010: Increases at highest education

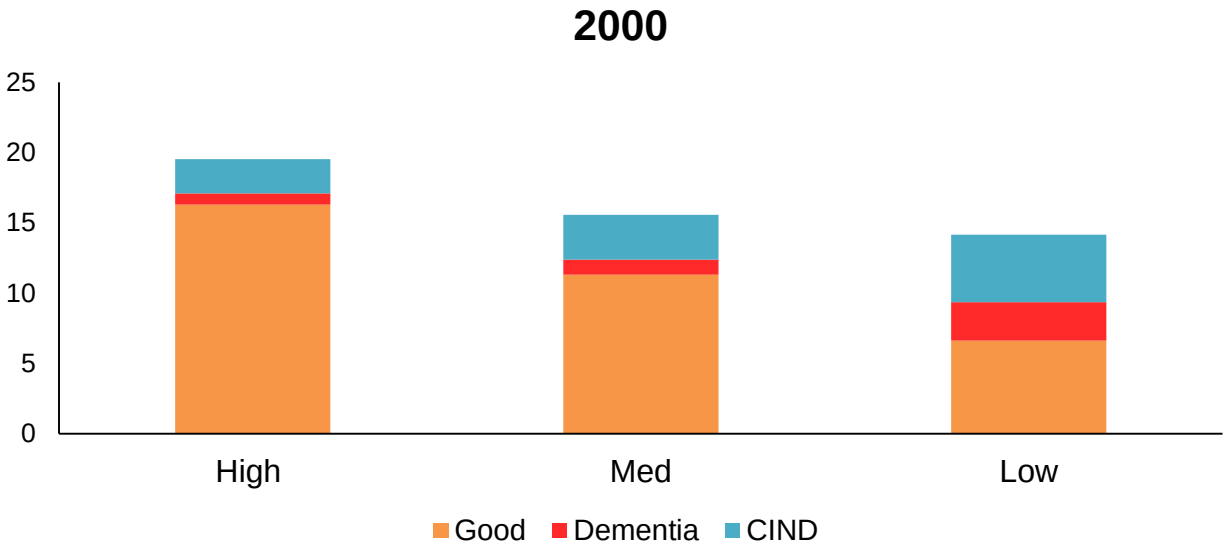


Life Expectancy by Education at Age 65: 2000 and 2010

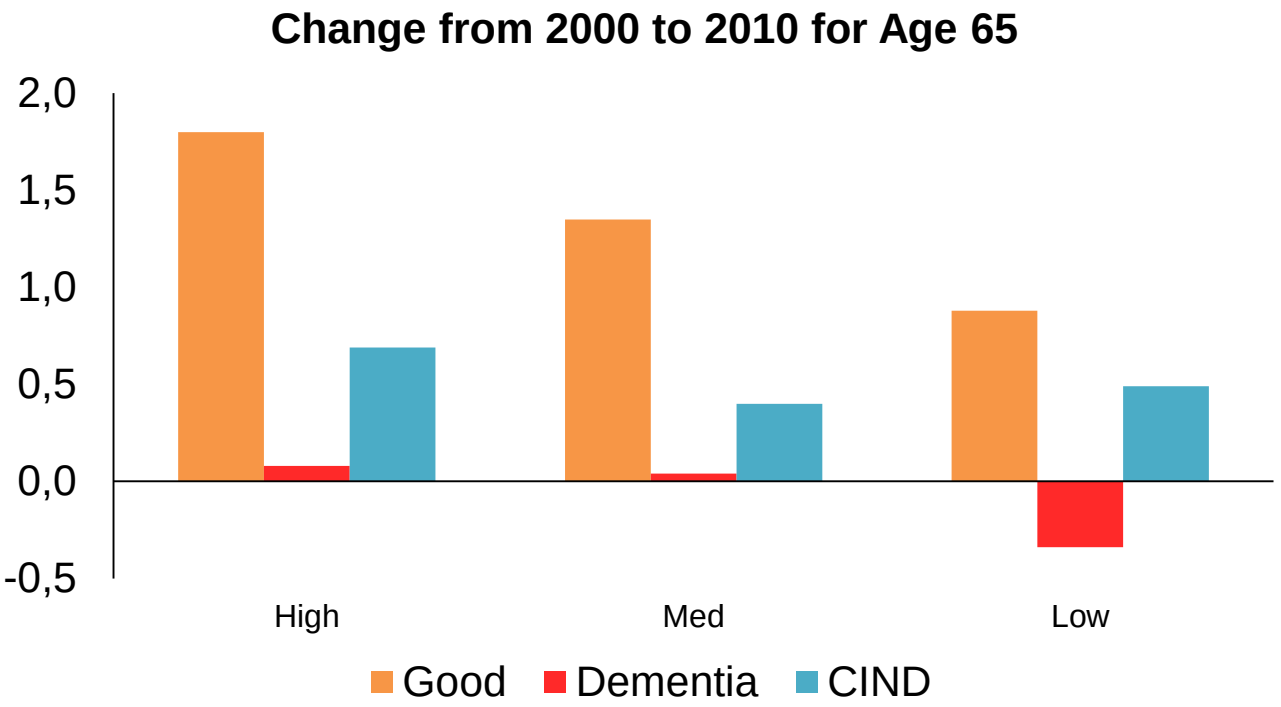




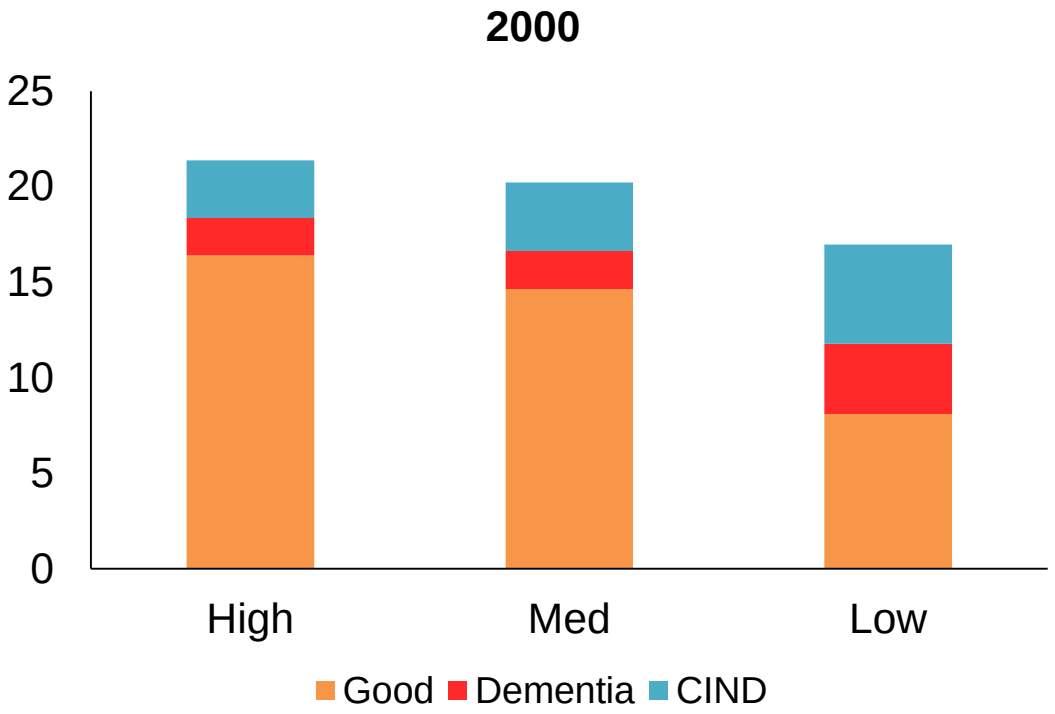
Male Life Expectancy at age 65 in cognitive states by Education



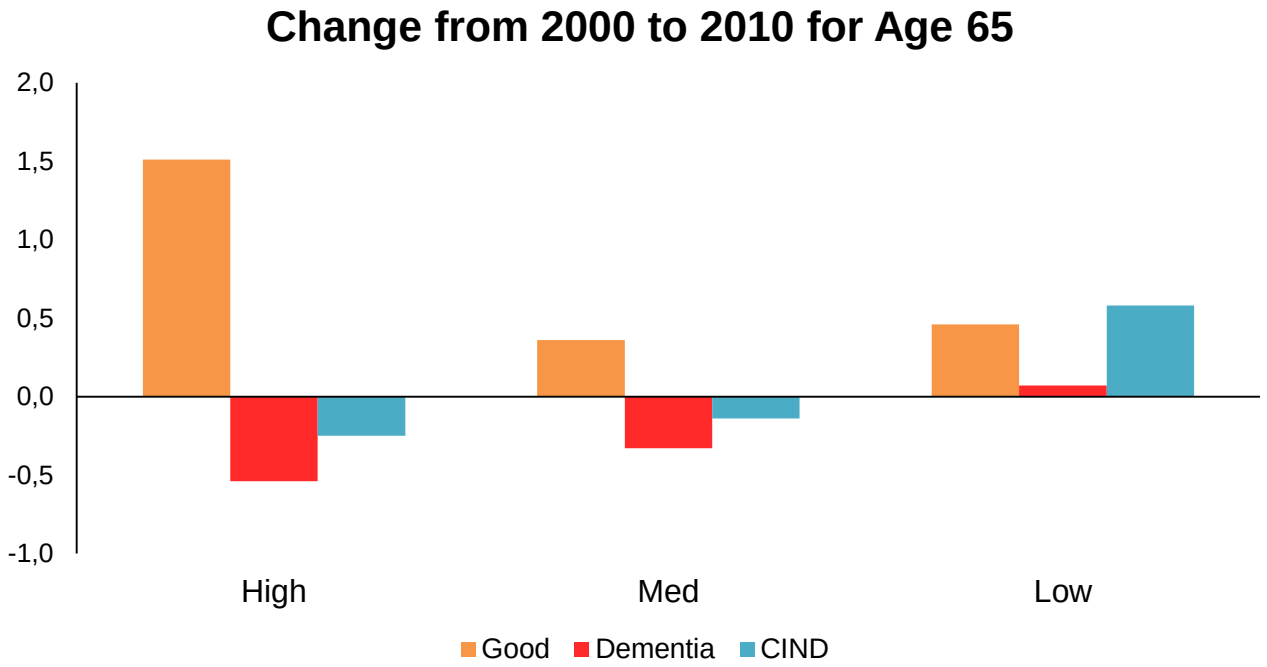
Male Cognitive Life Expectancy by Education



Female Cognitive Life Expectancy by Education



Female Cognitive Life Expectancy by Education



Conclusion

- **Men**
  - **Compression of morbidity occurred for men**
  - **In two higher education groups because cognitively healthy life increased absolutely and relatively**
  - **Among those with the lowest education, compression of cognitive morbidity occurred because of increase in years with good functioning and decrease in years with dementia**

- **Women**
  - **High and middle education experienced a compression of cognitive morbidity because of lengthening of life with good cognition and some decrease in life with dementia.**
  - **Low education increase in life with good cognition and life with CIND, no change in life with dementia. Proportion of life with good cognition did not change.**

Implications

This is the first indication for the US that there has been a compression of cognitive morbidity.

Leads to expectation of longer life with good functioning – but differential by gender and by educational group.

More years of healthy life will reduce costs of medical care and caregiving.

Healthy life is about life cycles – growth in the older population is the impetus for increasing cases of dementia – Better health through life is probably at root of improving cognition.

Acknowledgements

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