Cognitive and Happy Life Expectancy in the US: Implications of Differential Measurement of Cognitive Impairment and Happiness for Estimates of Quality of Life

Scott M. Lynch & Anthony R. Bardo

Duke University
Department of Sociology
Population Research Institute (DUPRI)

Background

- Increased longevity w/o quality of life is an empty prize

- Recent focus on multiple health measures and measurement

- Yet, does good health equate to a good quality of life?
  - vice versa

Background

- Cognitive impairment incidence decreasing, but overall prevalence increasing
  - CI expected to have major impact on quality of life

- Can people be happy even when cognitively impaired? If so, for how long?
  - CI and happiness do coexist, and HapLE exceeds CogLE (Bardo & Lynch)

- Are these findings robust to different CI and happiness measurement?
  - CI thresholds and missing cognition and happiness information

Background: CI Measurement

- MMSE is one common instrument used in survey-based research
  - lack agreement surrounding thresholds

- CON: concordant diagnoses with neuropsychological assessment
  - range 0 to 27 [excludes orientation and naming items]; impaired < 12

- EPI: distributional approach
  - range 0 to 35; impaired < 25th percentile [impaired < 18]

- HW: foundational approach (Herzog & Wallace, 1997)
 - range 0 to 35; impaired < 9

Background: Missing Cognition and Happiness Information

- MMSE and happiness only asked of self-respondents
  - CI common reason for using a proxy

- CI sometimes based on IADL limitations, proxy-reported memory, and interviewer assessment of difficulty completing the interview

- No standard for replacing missing happiness information
  - risk over/under estimating years to be lived happy
  - need to reflect extreme lower and upper bounds

Data: Health and Retirement Study

- Panel with biennial waves from 1998-2014 (RAND version P)

- Only respondents age 65-years and older

- Only one person per household

- Data sets consist of 46,828 spells

Analytic Approach
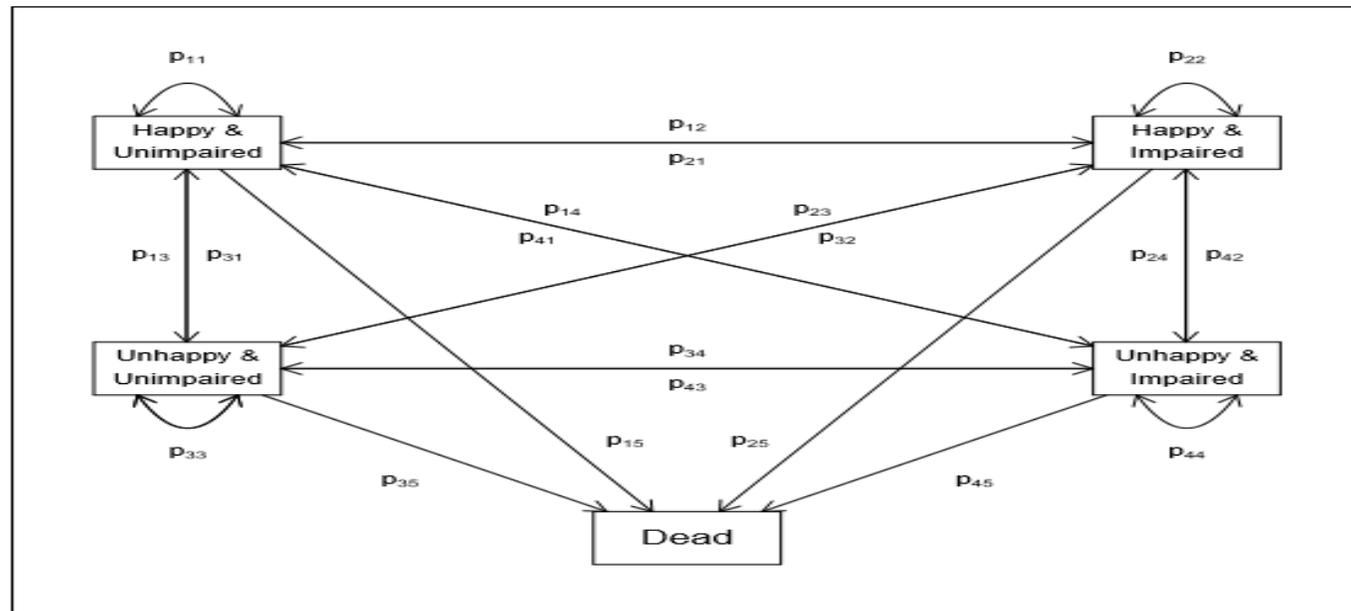
- 19-dimensional multinomial logit model
  - bootstrap approach

- Compare results from different cognitive and happiness measurement approaches

Note: results from covariate profile:
NH-white, non-south, married, female

| Data set	Cog Meas.	Cog Miss.	Happy Miss.
1	HW	CC	CC
2	HW	2+ IADL	LOB
3	HW	2+ IADL	Hap
4	HW	2+ IADL	UHap
5	EPI	CC	CC
6	EPI	2+ IADL	LOB
7	EPI	2+ IADL	Hap
8	EPI	2+ IADL	UHap
9	CON	CC	CC
10	CON	2+ IADL	LOB
11	CON	2+ IADL	Hap
12	CON	2+ IADL	UHap

Results: Total Life Expectancy

- Sanity check

- Changing cognitive measurement and happiness missing data strategies doesn't fundamentally alter TLE

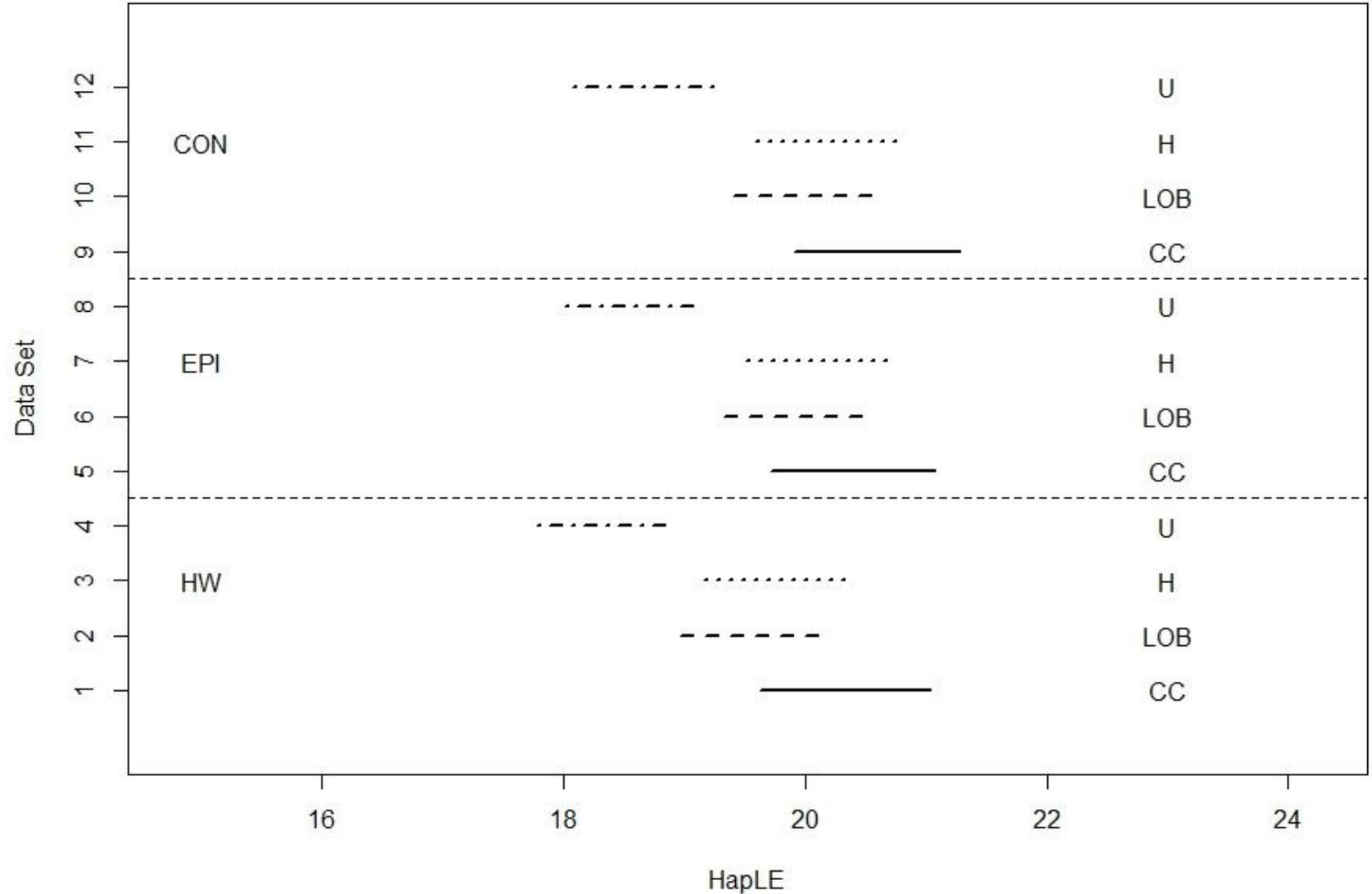- Important to account for proxy respondents
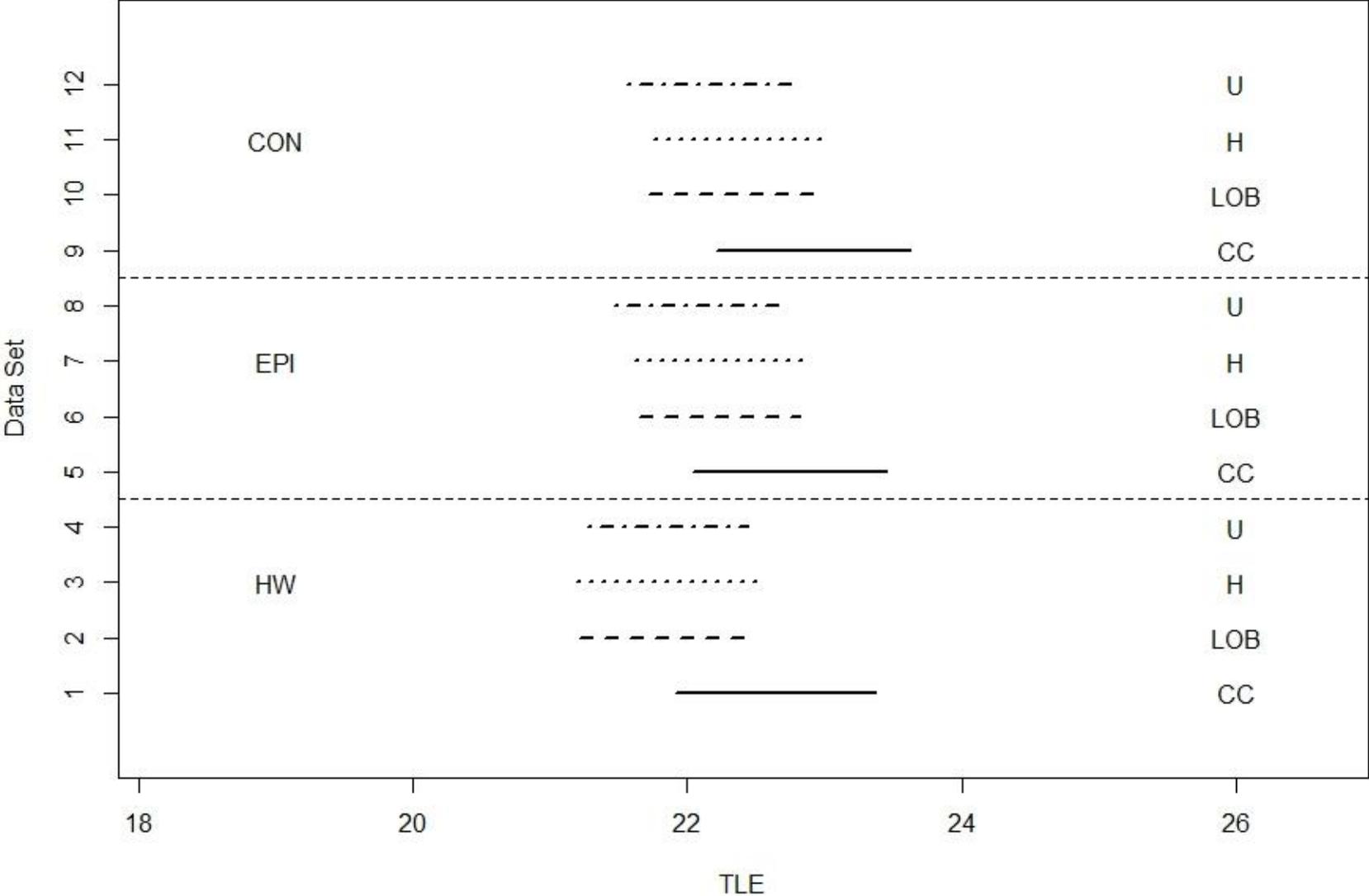
Results: Cognitive Life Expectancy

- CON & EPI approaches yield relatively similar CogLE estimates

- HW approach ~ 3-yrs > CogLE
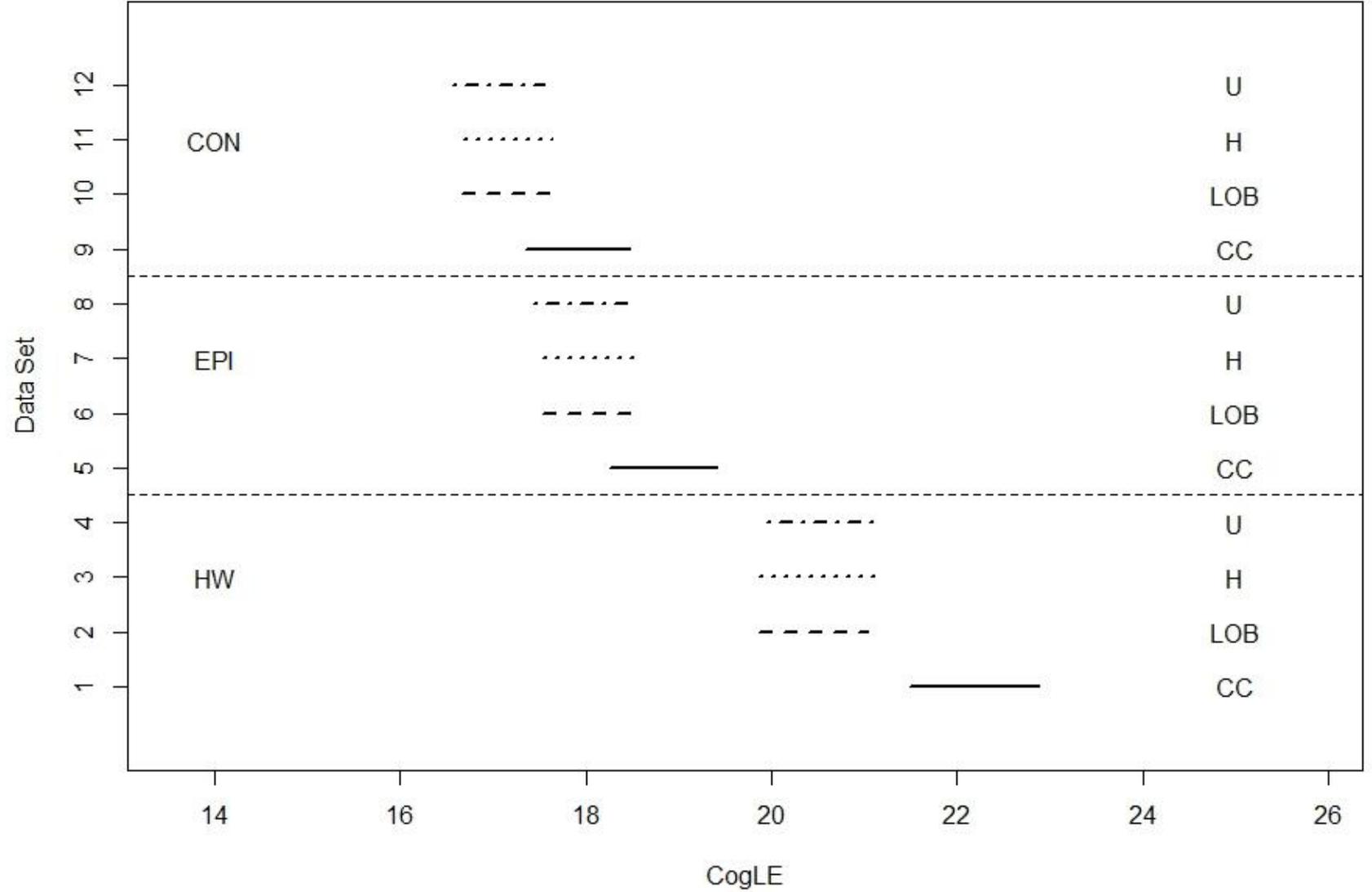
Results: Happy Life Expectancy

- LOB best guess for missing happiness information

- Extreme unhappy bounds ~ 2-yrs < HapLE

- What about CogHapLE?

Results: Cognitive and Happy LE

- A substantial number of years can be expected to be lived both cognitively healthy and happy

- There is some variation by measurement method

- Variation suggests we look at ImpHapLE
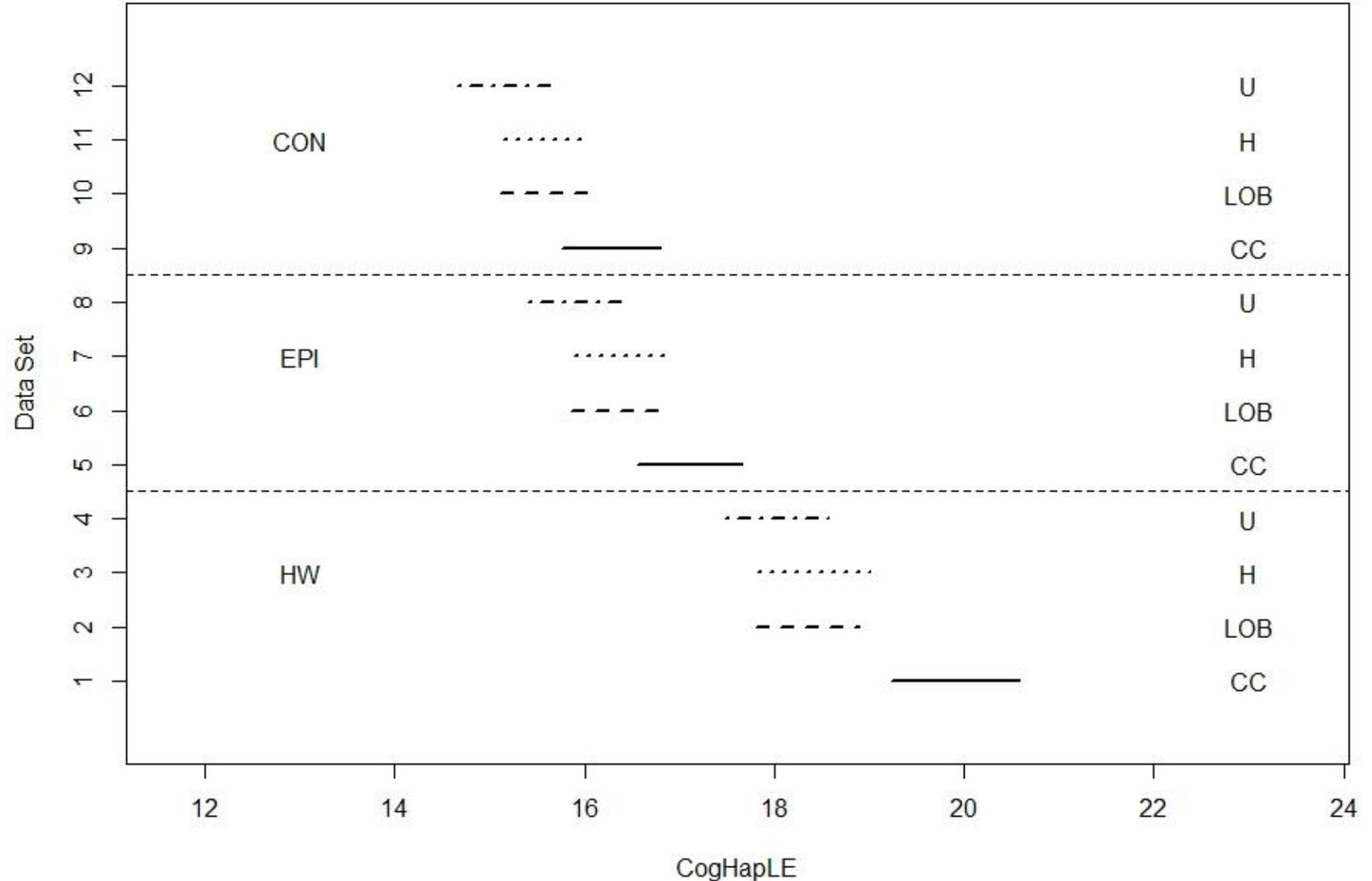
Results: Impaired but Happy LE

- Happiness and CI appear to coexist

- Even when considering extreme lower bounds

- Less so for higher CI threshold (i.e., HW)

- Suggests we look at ratio of unhappy vs. happy years within impairment
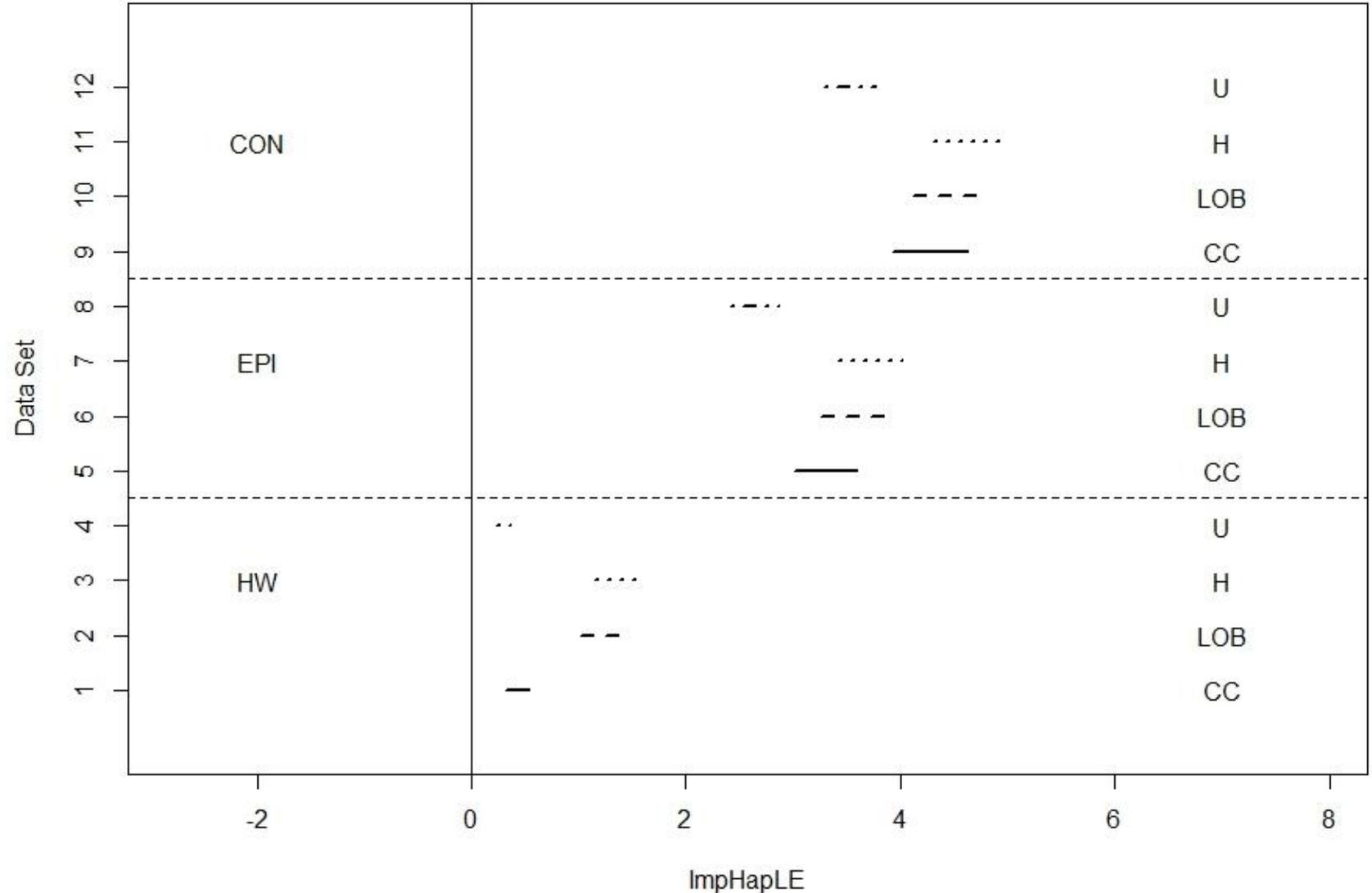
Results: ImpHapLE / ImpLE

- LOB is our best guess

- Not much different from upward bounds
  - except HW

- Possibly over estimate HapLE

- Lower bounds 20 points less (CON & EPI)

- Concern w/ severe CI (HW)
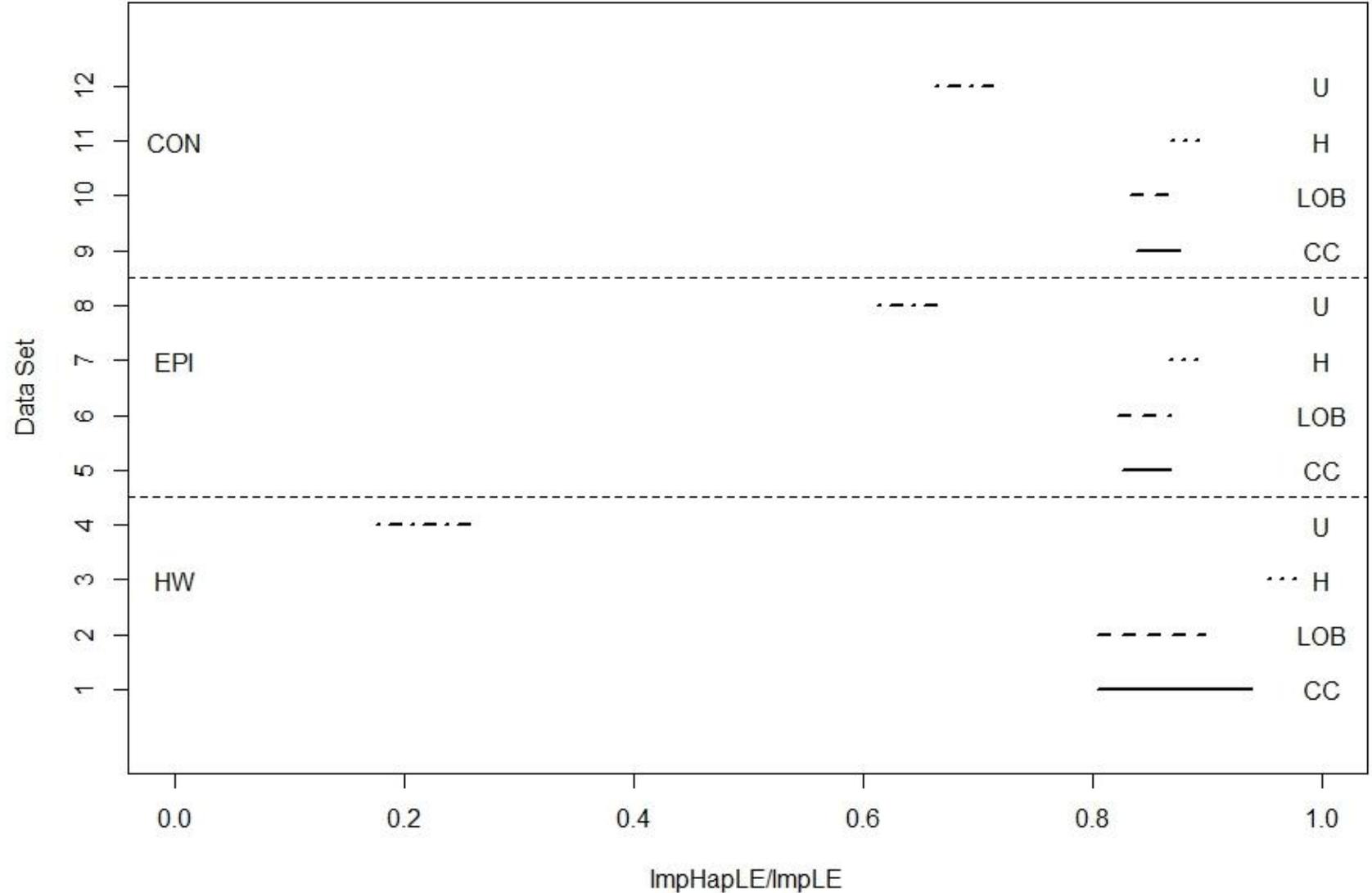
Conclusions

- Findings largely robust to different CI and happiness measurement
  - less certain with regard to severe CI

- Good health does not equate to good quality of life, nor vice versa
  - What does it mean to be unhealthy but happy?

- Need to simultaneously examine health and well-being expectancies
  - WHO definition of health + QoL ≠ absence of a negative