



Background

- ☆ Healthy aging, one of the public health priorities, achieved by recognizing differences in extrinsic factors (physical, technical, social, and economic environments) as health disparities.
- ☆ Brain's frontal and temporal lobes (amygdala and hippocampus) regulate emotions, memory, learning, and stress. impaired emotion through cortisol in the amygdala, subsequently impairing cognitive function.
- ☆ A optimal quality of aging – a balance of the intrinsic capacity (cognitive function) and extrinsic capacity of older adults.
- ☆ Investigates the association between extrinsic factors (measured by the abstracts of physical, technical, social, and economic environments) and intrinsic factor cognitive function (measured by cognitive function assessments) of older adults
- ☆ Objective: To support the implementation of scientific concepts in public health.

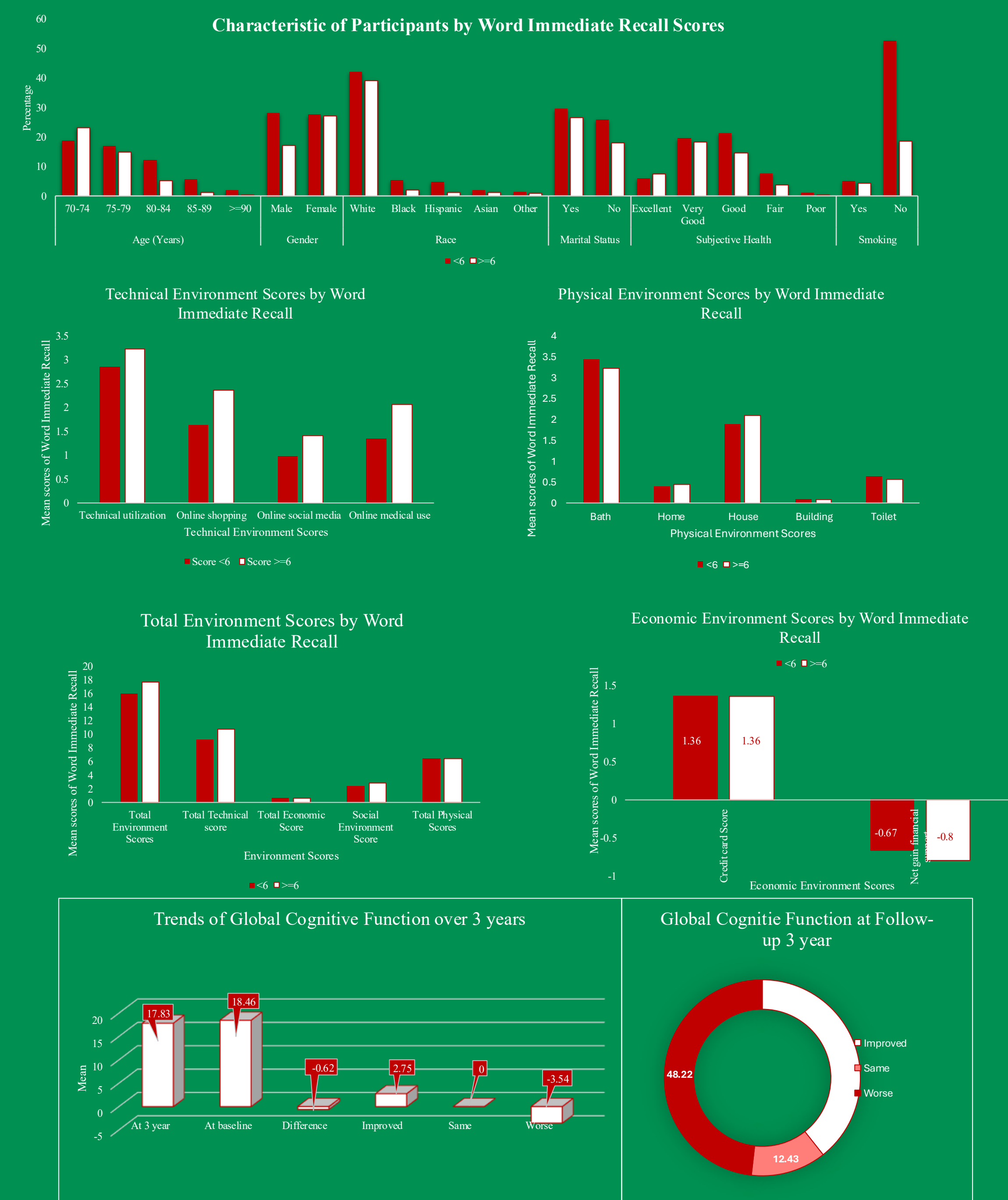
Methods

- ☆ Cross-sectional and Prospective study
- ☆ Participants 19,558,802 (weighted) , 2,090 (unweighted)
- ☆ Strata : 56, Probably sampling units 110
- ☆ National Health and Aging Trends Study (NHATS) Survey
- ☆ Age > 65 years in the United States (2020 to 2023)
- Exposure/predictor (Extrinsic) – At baseline
- Construct of environmental scores from Abstract of following
 - ☆ **Construct of Physical environments**
 - ✧ Abstract of composite physical environments of following: Building – having elevator, stair lift flide, common space meals, space social events : “ yes or no”
Home – having elevator, stair lift glude, bed kitchen bath on same floor: ” yes or no”
House – having number of floors, ramp at entracem common or private entrance, stairs outside : “yes or no”
Bath – having bathtub, bath grab bar in shower, shower stall, bath seat in shower tub, bath raised toilet seat, bathgrab bars toilet, and bath medical emergency system : “yes or no”
Toilet – raised toilet, grab bars in toilet : “yes or no”
 - ☆ **Construct of Technical environment**
 - ✧ Abstract of composite of technical use of computer device, email; online shopping, social media, paying bills, and medical use : : “yes or no”
 - ☆ **Construct of Social environment**
 - ✧ Abstract of social networks – number of social contacts

Methods

- ☆ **Construct of economic environment**
 - ✧ Abstract of composite of economic status (credit card debt and net financial support gain)
 - Abstract of Credit Card debt - Pay off credit cards (paoff balance, pay minimum, pay minimum bit not entire balance, do not have credit cards), credit card for medical care (yes or no), amount for medical care on cards (most, some, a little, inapplicable)
 - Abstract of Net financial gain : differences of net financial receiving and providing (Subjective)
- ☆ Total environmental score:
 - ✧ Abstract of composite of total technical, physical, social, and economic environment score
 - Outcome: Intrinsic :
 - ☆ composite cognitive function (orientation, immediate and delayed word recall, clock drawing) at 3-year
 - ☆ No decline in cognitive function variable at 3- year
 - ☆ Decline in cognitive function variable at 3- year
 - Covariates: baseline age, gender, race, marital status, smoking status, medical conditions, and wellbeing.
 - Statistical analysis: Cronbach's alpha, factor analysis, and proportional hazard models (survey) (STATA, SAS).

Results



Results

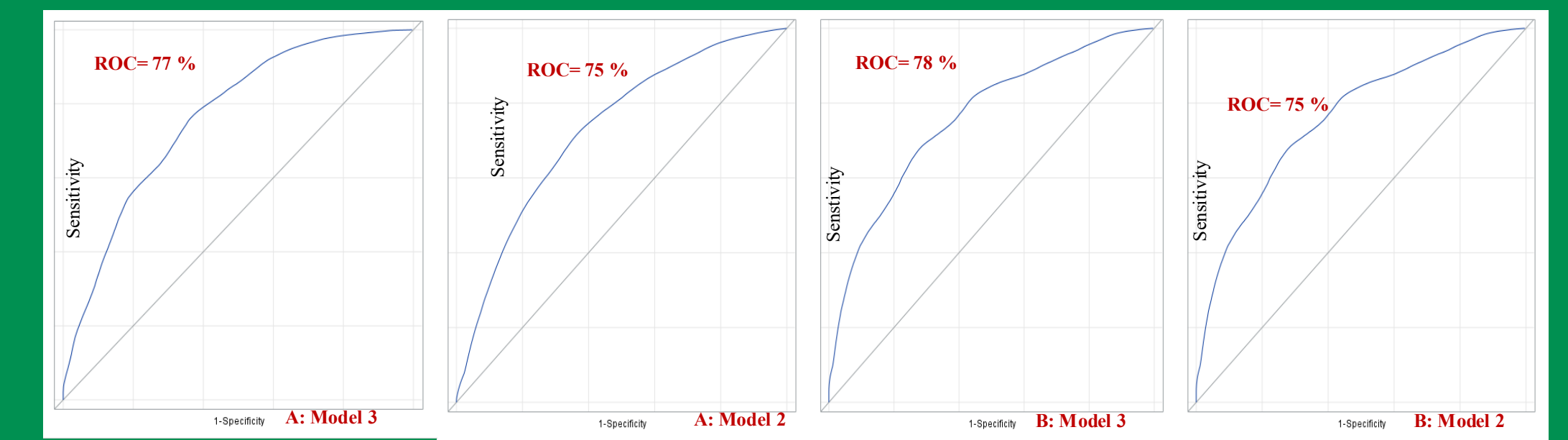


Figure 3: Showing ROC curves of Total Environmental Scores and Cognitive Function A: No decline and Improved, B: Declined

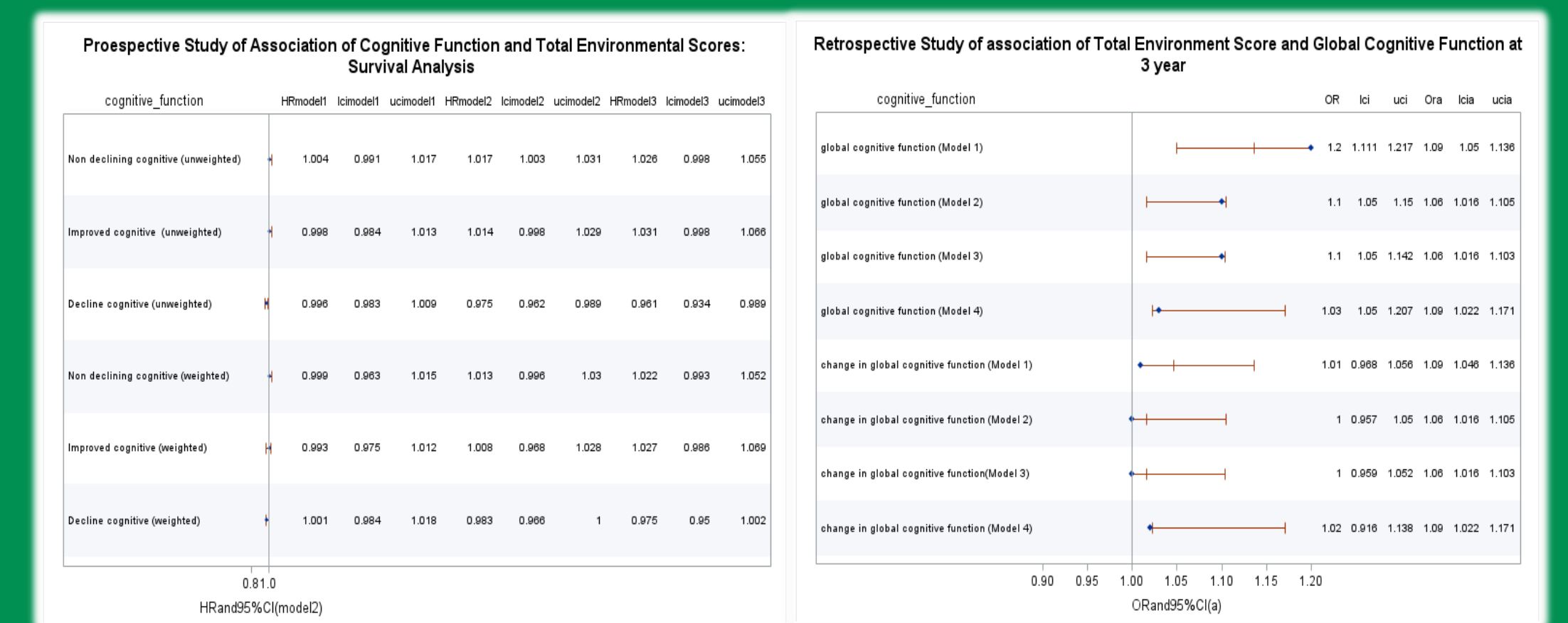


Figure 4: Showing Results of Survival Analysis: Model 1, Model 2, Model 3:

Figure 5: Showing Results of Multiple Regression Analysis (Weighted): Model 1, Model 2, and Model 3.

- ☆ Medical conditions: Number of medical conditions participants had at baseline (heartattack, heart diseases, High blood pressure, lung disease, arthritis, osteoporosis, diabetes, cancer, skin cancer) at baseline
- ☆ Race: White, Black, Hispanic, Asian and Pasific Islander, Others at baseline
- ☆ Wellbeing measured by subjective Health, Overall healthstatus answers (Excellent, very good, good, fair, poor) at baseline
- ☆ Smoking Status: At baseline: Yes or No
- ☆ Construct total environment scores explain reliability of 70%
- ☆ Model 1: Unadjusted, Model 2: Adjusted for baseline cognitive function, gender, age, race, marital status, subjective health,
- Model 3: Model 2 and Medical conditions

Conclusion

- ☆ **Strength**
 - ✧ Generalizability to population in the United States of America
 - ✧ Selection bias avoided due to population based probability sampling design which is almost similar to random selection
 - ✧ Causality and Temporality achieved
- ☆ **Limitations**
 - ✧ Respondent bias due to survey design
- ☆ **Implications**
 - ✧ Findings from this study inform the development of public health solutions that provide public health programs for them to age in place at home, thereby achieving healthy aging.

- ☆ **Having a favorable extrinsic factor would allow individuals to engage in social and physical activities to have a better intrinsic factor, cognitive function.**