

Moderating effects of work demands, ethnicity, and community participation on cognitive function in the Rural Roads to Cognitive Resilience cohort

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BACKGROUND/INTRODUCTION

Cognitive disparities have been observed for ethnic minorities, middle-age and older adults, but questions remain about the factors that explain disparities in rural communities.^{2,3} Black and Hispanic individuals experience higher risk of Alzheimer's disease and related dementias (ADRD) than non-Hispanic White individuals.¹ However, little is known about how occupational complexity, rural residence, and community engagement jointly influence cognitive function in geographically isolated, low-income agricultural communities.^{1,2}

Characteristic	Statistic
Sample size, N	964
Age (years), M (SD)	64.4 (10.0)
Education (yrs), M (SD)	11.7 (3.0)
Years in rural area, M (SD)	37.6 (23.1)
Female, n (%)	655 (68.9%)
Racial group, n (%)	
Black	588 (71.5%)
White	203 (24.7%)
Other	61 (5%)
Hispanic, n (%)	167 (17.3%)
Afro-Caribbean, n (%)	49 (5%)
Marital status, n (%)	
Single, widow, separated, divorced	541 (65.6%)
Married/partner	281 (34.4%)
Lives alone, n (%)	318 (38.7%)
MoCA (unadjusted), 0-30, M (SD)	26.5 (3.9)
Participation in Community group (yes)	653 (67.7%)
Employment Status	
Agricultural (farm work, landscaping)	292 (30.0%)
Educators (teachers, teaching aides)	111 (11.5%)

AIMS/OBJECTIVES

Our goal: to evaluate salient **predictors of cognitive function** in a **rural, geographically remote area** where aging adults are at heightened risk for ADRD from limited healthcare access, education, and occupational opportunities.

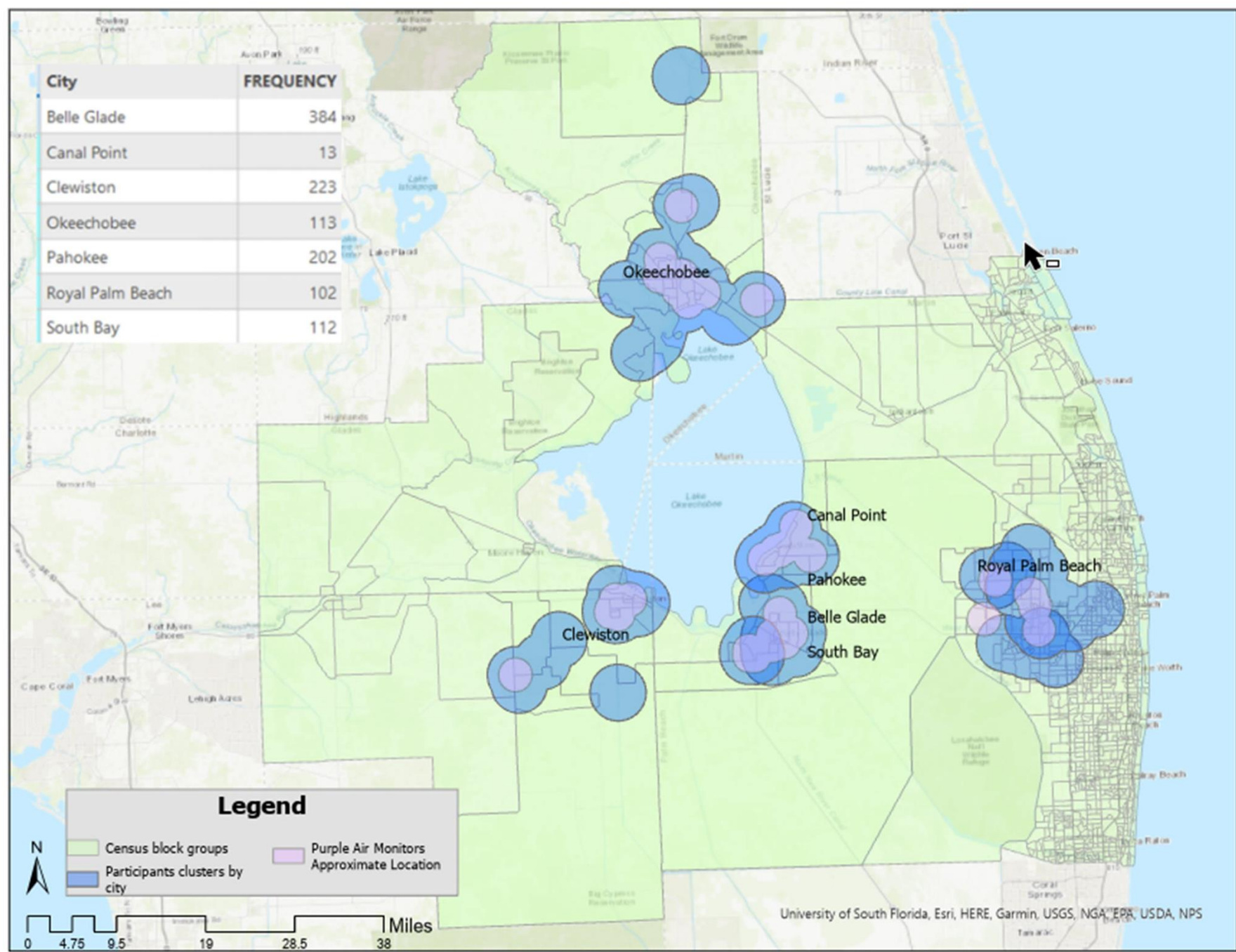


Figure 1. Geographic distribution of participant clusters across rural, south-central Florida communities. PurpleAir monitor locations superimposed.

METHODS

In this three-year, National Institute on Aging funded cohort study, our sample of 964 dementia-free adults from five rural, south-central Florida agricultural communities had low access to higher education and occupational advancement. Participants are primarily low income, Black, female, age 45 and older. Global cognitive function was measured by MoCA scores. An independent-samples t test was conducted to examine differences in Montreal Cognitive Assessment (MoCA) scores by job status using the original, unbalanced sample. Social group participation was measured by BSNI-6, Q5 (score yes/no). A linear mixed model, adjusted for demographic variables, was used to test the interaction between years of education and social participation (BSNI) on global cognitive function.

RESULTS

- Time 1 data revealed being “retired” was associated with a 0.91-point lower MoCA score ($p = .002$). After controlling for demographics, non-retired participants had higher mean MoCA scores ($p = .003$) by an average of 0.88 points.
- Comparing MoCA scores by occupation, participants in the “Educators” group ($n = 111$) demonstrated higher cognitive scores than “Agricultural” ($n = 292$) workers $t(243.66) = -2.47, p = 0.014$.
- The relationship of years of education with MoCA was *stronger* for those who participated in at least one social group.
- Years lived in a rural area significantly predicted MoCA scores ($p = 0.042$). Every 10 years of rural living was associated with a 0.12-point lower MoCA score ($p = .042$).
- Spanish/Latino ethnicity was associated with an average of 2.37-point MoCA score ($p < .001$), after controlling for demographics.
- Age, gender, and chronic illness were not significantly associated with MoCA scores.

Table 1
Descriptive Statistics for MoCA Scores by Job Group (Unbalanced Sample)

Job	N	M	SD	SE
Agricultural	292	25.97	3.90	0.23
Educators	111	26.90	3.16	0.30

Note. MoCA = Time 1, Montreal Cognitive Assessment

Table 2
Independent-Samples t Test Comparing MoCA Scores by Job Group (Unbalanced Sample)

	t	df	p	Mean Difference (0 ~ 1)	95% CI
Educators versus Agricultural workers	-2.47	243.66	.014	-0.93	[-1.67, -0.19]

TAKEAWAY MESSAGE

- Midlife work complexity and work post-retirement may protect cognitive health, independent of educational attainment.**
- Further evidence is needed to clarify interaction of work complexity, education, socioeconomic status, and residential location on cognitive health.**

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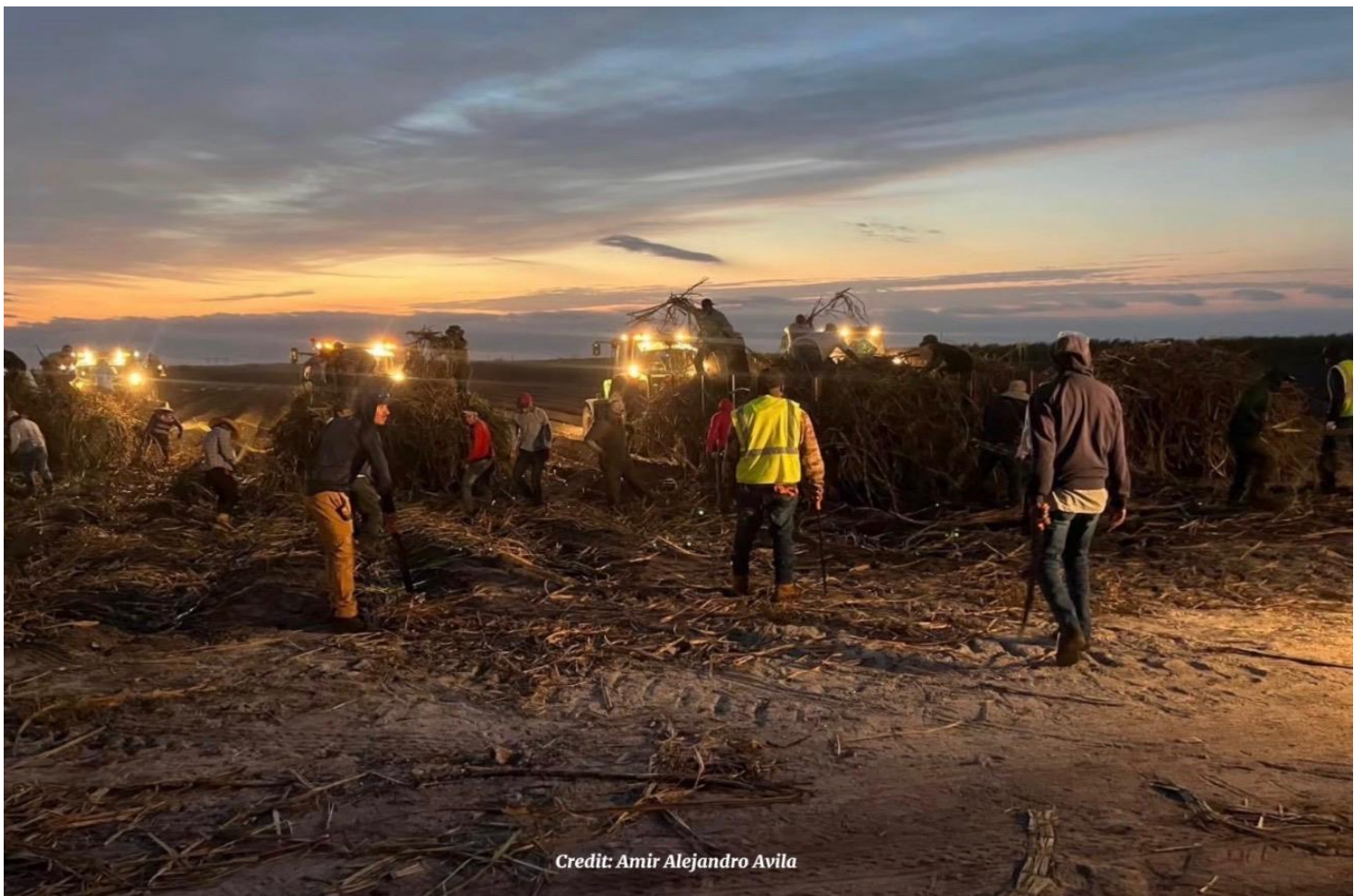
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CONCLUSION

- Four of 11 variables predicted MoCA scores, accounting for 17% of the variance (Spanish ethnicity, retired, rural residence, and education).
- Findings explain how education, post-retirement work, and work complexity impact cognitive function in rural, ethnic residents.
- Results may inform interventions to decrease risk of ADRD.
- Future studies should examine whether community participation attenuates cognitive decline in rural, low-income populations over time.



Caption: Workers harvesting sugarcane



Caption: Sugarcane workers in pre-dawn hours.

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