

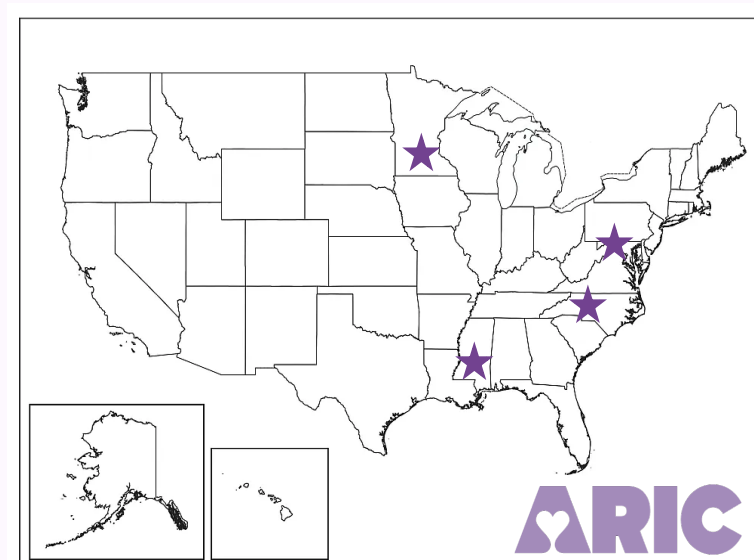
Introduction

- Stroke affects approximately 795,000 individuals in the US each year, and is a leading cause of mortality and long-term disability
- Up to a third of these patients will subsequently develop post-stroke dementia (PSD)
- The risk of milder pre-dementia syndromes post-stroke, including Mild Cognitive Impairment (MCI) and Motoric Cognitive Risk (MCR), remains poorly understood

Objectives

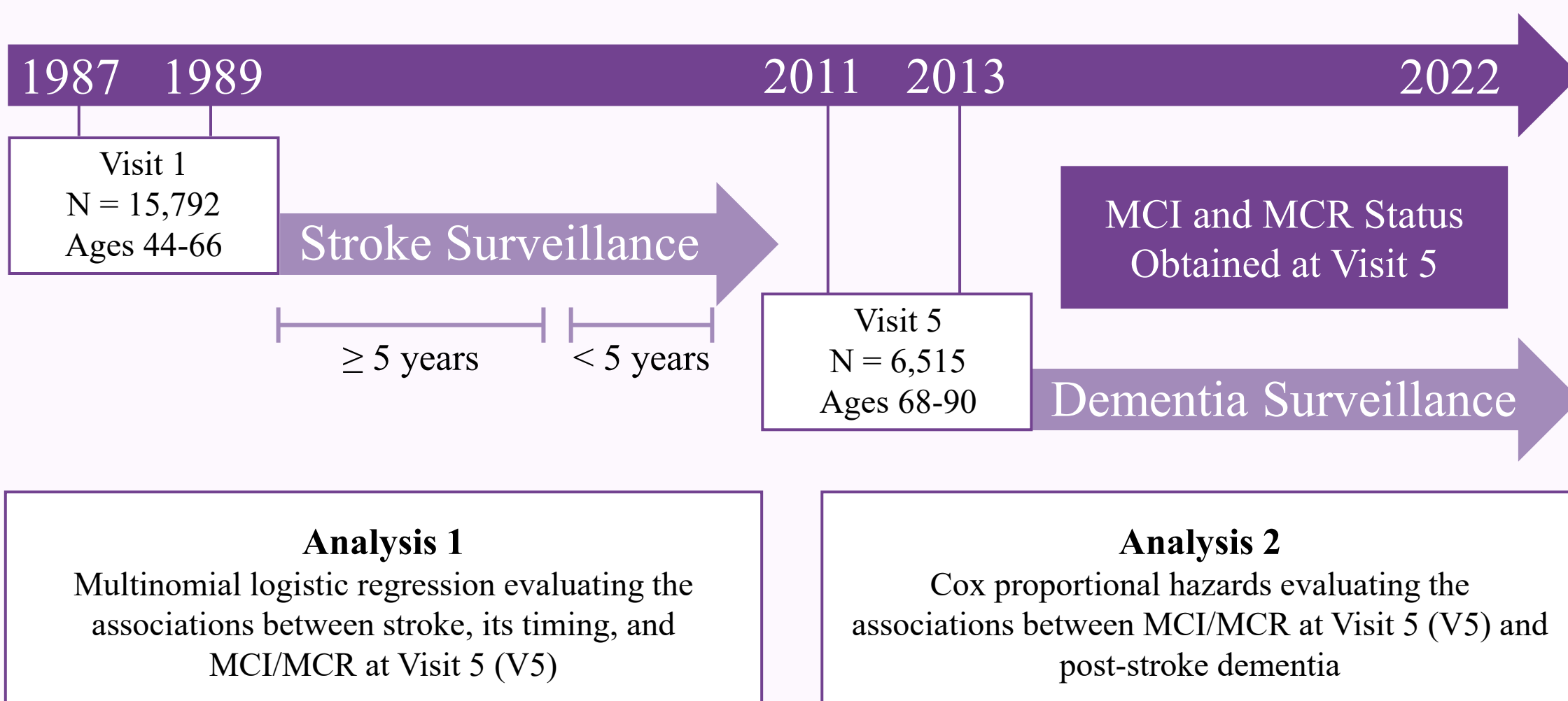
Evaluate 1) the association between stroke and MCI and MCR, and 2) the role of MCI and MCR in identifying individuals at risk for PSD in a large community-based cohort.

Methods



The Atherosclerosis Risk in Communities (ARIC) Study

- A prospective cohort that enrolled individuals from four US communities
- Participants were censored at time of death, dementia, loss to follow-up or administrative censoring (Dec. 2022)



Exposure – Stroke (Ischemic or Hemorrhagic)

- Stroke was adjudicated in ARIC through hospitalization records and surveillance methods with expert physician review

Outcome – MCI/MCR, Dementia

- Four level MCI/MCR Category (None, MCI-Only, MCR-Only, Both)
 - MCR: slow gait (≥ 1 SD below the population threshold (m/sec) means, adjusted for sex and age) and subjective cognitive complaints (Visit 5)
 - Adjudicated MCI: in-person cognitive tests, informant interviews
- Adjudicated dementia diagnoses used in-person & telephone-based testing, informant interviews, and hospitalization codes

Statistical Analysis

- See above (Multinomial logistic: Analysis 1; Cox model: Analysis 2)
- Models adjusted for age, sex, race-center, education level, smoking, hypertension, diabetes, BMI, & APOE status

Results

Table 1. Characteristics of ARIC Sample by MCI/MCR Category

	Neither (N=4,100)	MCI-Only (N=1,062)	MCR-Only (N=130)	Both (N=80)	Overall (N=5,372)
Age at V5, y, mean (SD)	74.9 (4.9)	76.6 (5.1)	76.1 (5.4)	76.7 (6.2)	75.3 (5.0)
Female Sex, n (%)	2,458 (60.0%)	541 (50.9%)	91 (70.0%)	39 (48.8%)	3,129 (58.2%)
Black Race, n (%)	861 (21.0%)	207 (19.5%)	68 (52.3%)	15 (18.8%)	1,151 (21.4%)
Education Level, n (%)					
< High School	488 (11.9%)	138 (13.0%)	41 (31.5%)	12 (15.0%)	679 (12.6%)
High School	1,708 (41.7%)	476 (44.8%)	48 (36.9%)	42 (52.5%)	2,274 (42.3%)
More Than High School	1,904 (46.4%)	448 (42.2%)	41 (31.5%)	26 (32.5%)	2,419 (45.0%)
Prior Stroke, n (%)	108 (2.6%)	51 (4.8%)	7 (5.4%)	13 (16.2%)	179 (3.3%)
< 5y Before V5	33 (0.8%)	18 (1.7%)	4 (3.1%)	3 (3.8%)	58 (1.1%)
≥ 5 y Before V5	75 (1.8%)	33 (3.1%)	3 (2.3%)	10 (12.5%)	121 (2.3%)

Figure 1A. Adjusted odds ratios for prior stroke (<5 years before Visit 5) associated with MCI/MCR at Visit 5.

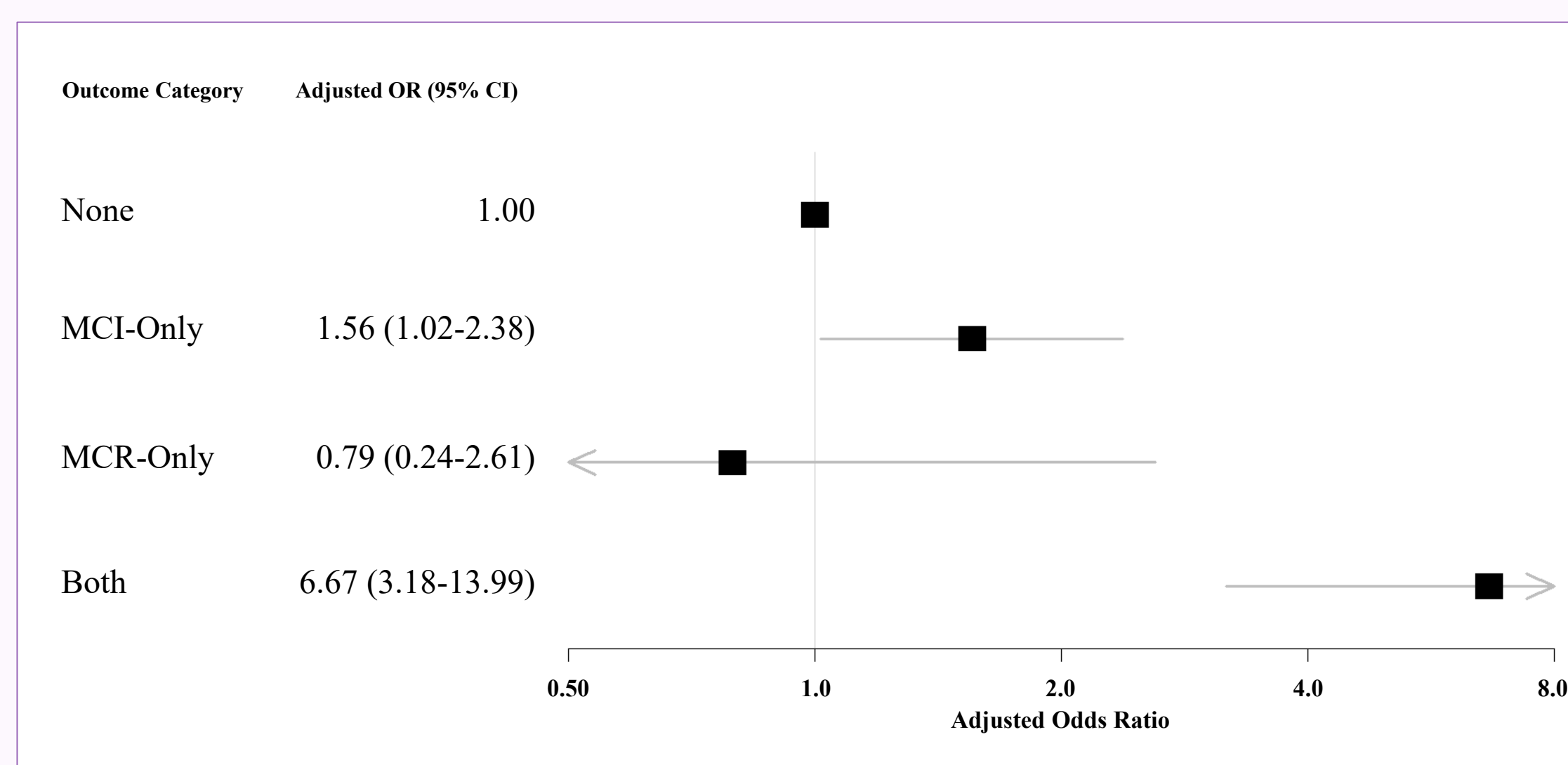
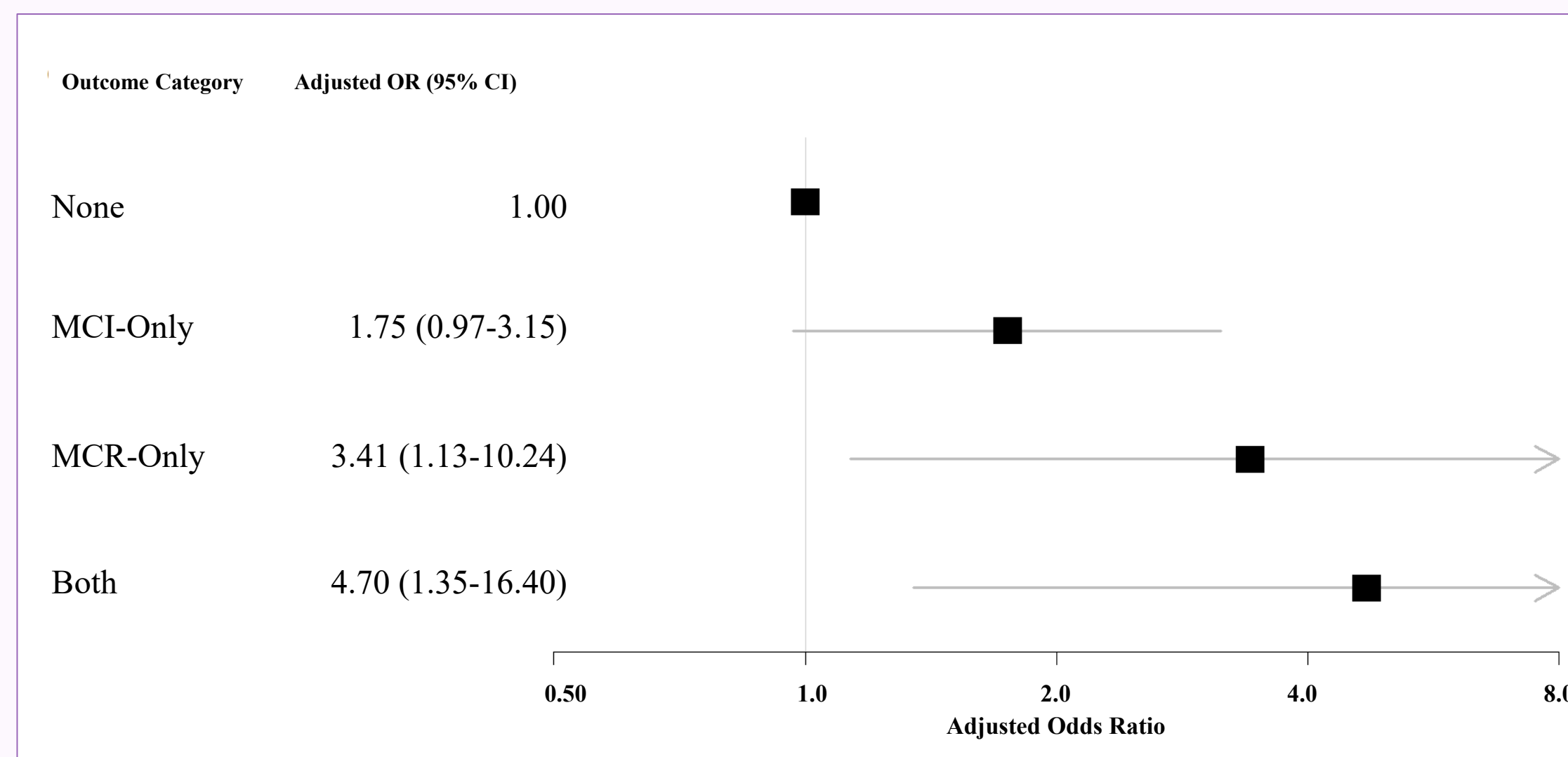


Figure 1B. Adjusted odds ratios for prior stroke (≥ 5 years before Visit 5) associated with MCI/MCR at Visit 5.



Results (...cont.)

Figure 2. Kaplan-Meier curve for dementia-free survival among participants with prior stroke based on presence or absence of MCI and MCR.

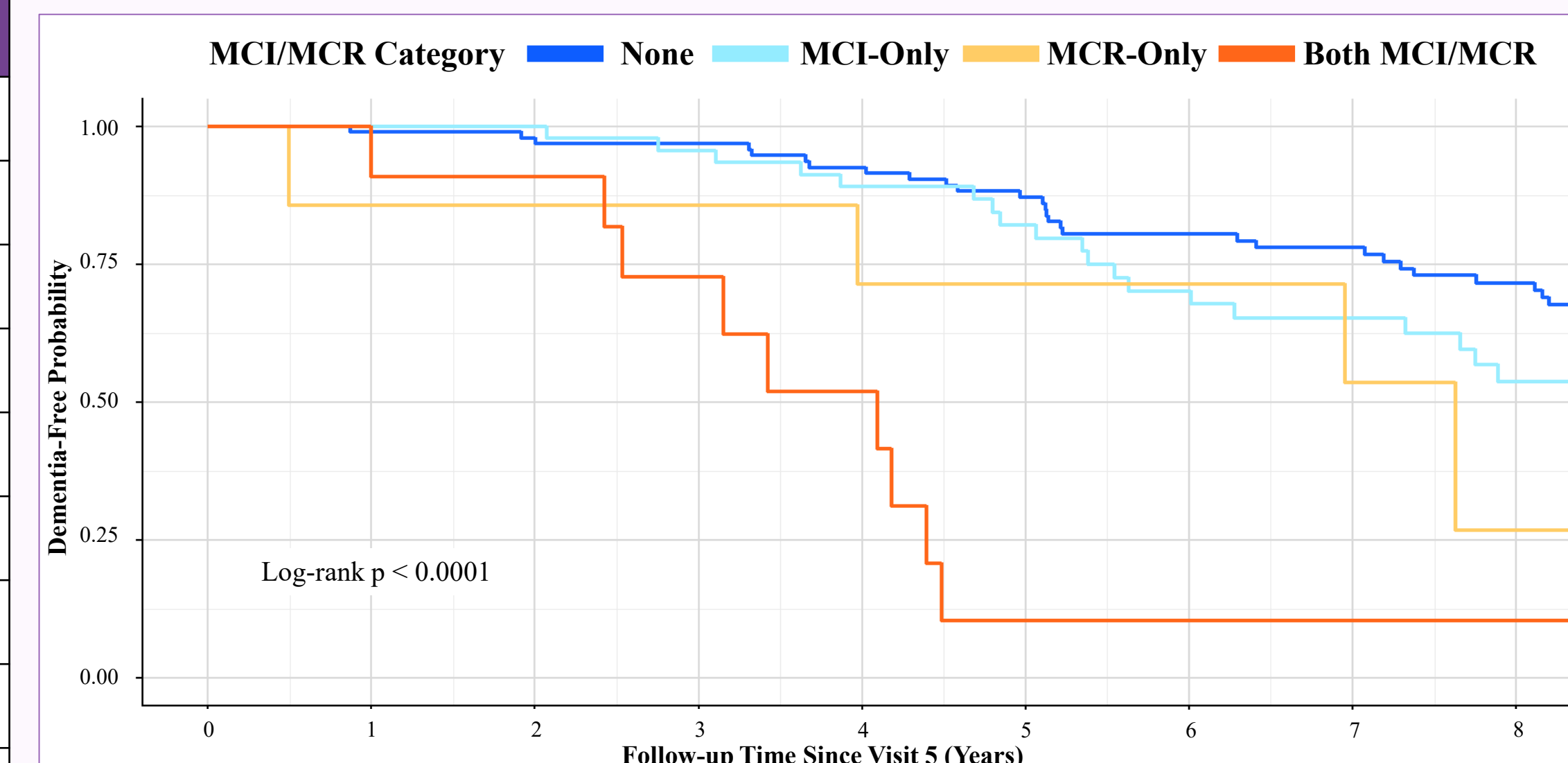


Table 2. Adjusted Hazard Ratios for Incident Dementia By MCI/MCR Category at Visit 5, Among Participants with Prior Stroke.

	N Dementia Cases/Total N	Model 1 (HR [95% CI])	Model 2 (HR [95% CI])	Model 3 (HR [95% CI])
MCI/MCR Category				
None	36/97	1 (Reference)	1 (Reference)	1 (Reference)
MCI-Only	23/46	2.35 [1.33–4.14]	2.26 [1.27–4.03]	2.26 [1.27–4.02]
MCR Only	4/7	2.31 [0.78–6.79]	2.22 [0.76–6.48]	2.16 [0.73–6.36]
Both MCI and MCR	9/11	12.0 [5.10–28.3]	15.8 [5.99–41.8]	16.6 [6.21–44.2]

* Significant (p<0.05) results shown in bold.

Model 1: Adjusted for sex, race-center, education level, age

Model 2 : Adjusted for Model 1 + APOE $\epsilon 4$ status, hypertension, diabetes, smoking status, BMI, and total cholesterol level

Model 3: Adjusted for Model 2 + time since stroke (<5/ ≥ 5 years)

Conclusion

In this community-based cohort, **stroke was associated with MCI, MCR, and their combination, which strongly predicted risk of post-stroke dementia.** Assessing both cognitive and motoric pre-dementia conditions may provide insight into early pathways linking stroke to late-life incident dementia.

Future Work

- Further assess the etiology of MCR and its contributions toward dementia
- Explore the associations with other cerebrovascular events (TIA)