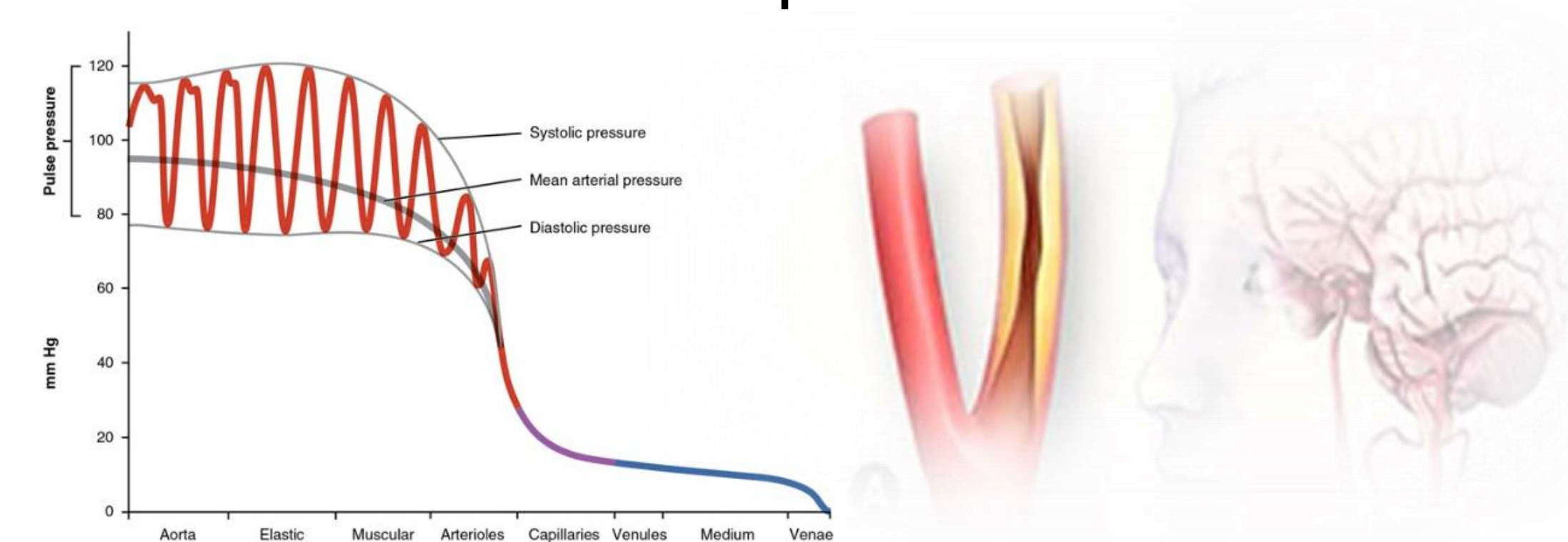


Zahra S<sup>1</sup>, Hong AT<sup>2</sup>, Arias JC<sup>1</sup>, French SR<sup>1</sup>, Wiskoski HE<sup>1</sup>, Lu IY,<sup>2</sup> Oxnam EB<sup>1</sup>, Orobiyi EO<sup>1</sup>, Ally M<sup>1</sup>, Escareno CE<sup>1</sup>, Culwell GC<sup>1</sup>, Heitkamp EN<sup>1</sup>, Vasquez F<sup>1</sup>, Vidana P<sup>1</sup>, Waughman X<sup>1</sup>, Hillis M<sup>1</sup>, Johnson K<sup>1</sup>, Jordon D<sup>1</sup>, Hishaw GA<sup>1</sup>, Bedrick EJ<sup>1</sup>, Vitali F<sup>1</sup>, Mushtaq R<sup>3</sup>, Altbach M<sup>1</sup>, Pruzin JJ<sup>1</sup>, Hughes T<sup>4</sup>, Alexander GE<sup>1</sup>, Tan TW<sup>2</sup>, **Weinkauff CC<sup>1</sup>**

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## BACKGROUND

- Blood pressure (BP) management is highly relevant for cardiovascular and brain health outcomes. Although clinical guidelines are trending towards increasingly strict BP control, some discordant results evaluating dementia-related outcomes indicate that more research is needed.
- Asymptomatic extracranial carotid atherosclerotic disease (aECAD), a hallmark cerebrovascular disease affecting >10% of those over the age of 60, may represent a key subpopulation unaccounted for in previous studies.



## METHODS

On-going CAM Study  
N=182

TriNetX Database  
N=45,110,376

### Inclusion Criteria:

- 50 - 85 years old
- Carotid stenosis and/or 2+ CVR

### Exclusion Criteria:

- Dementia
- Stroke/TIA < 6 months

### Inclusion Criteria:

≥ 50 years old with 2  
years prior data with &  
without  
aECAD.

### Exclusion Criteria:

- Dementia
- Stroke/TIA < 6 months

Patients with and without aECAD  
N=167

aECAD/HTN & No HTN  
N=215,336

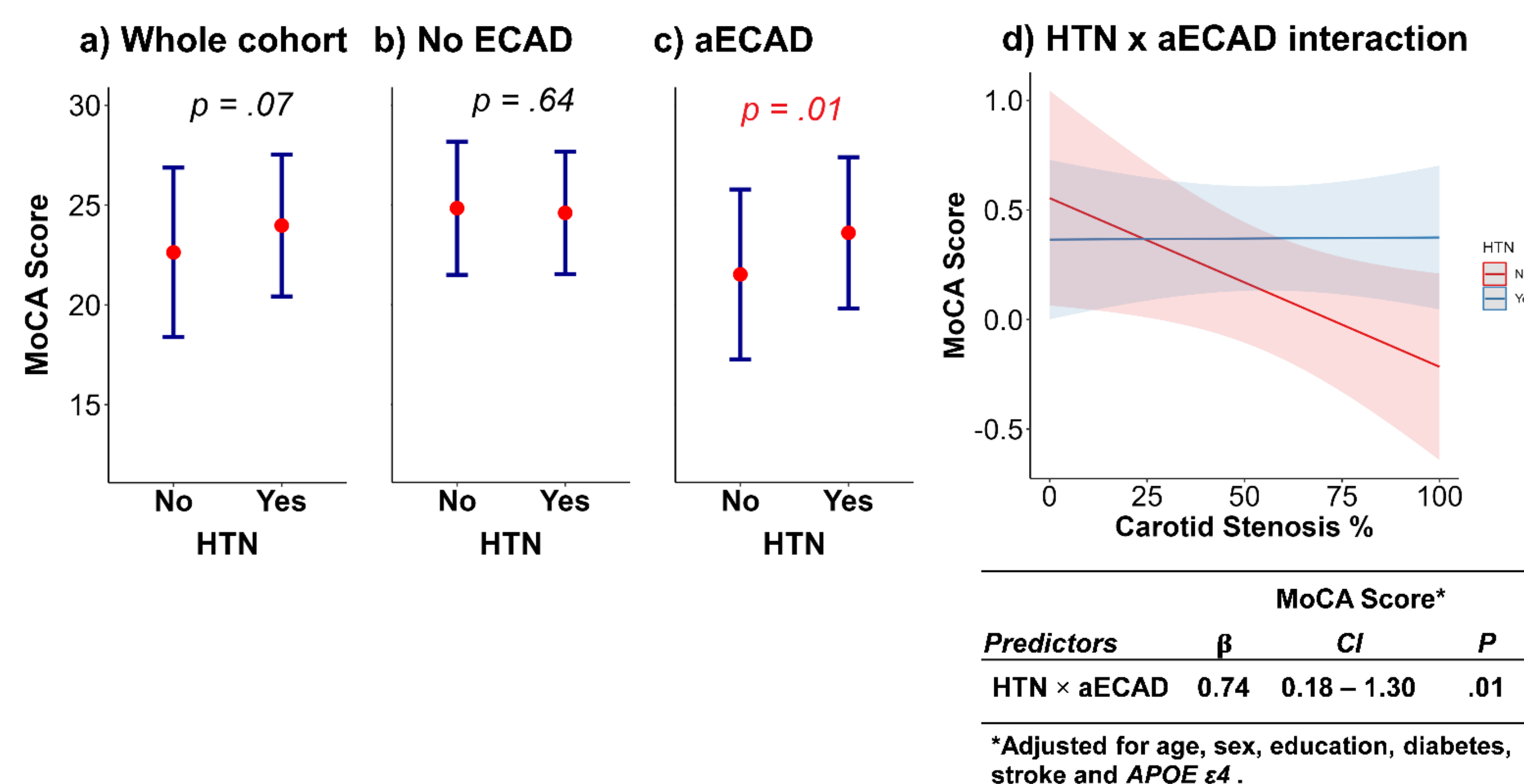
No ECAD/HTN & No HTN  
N=711,674

## Multivariable Linear Regression Models

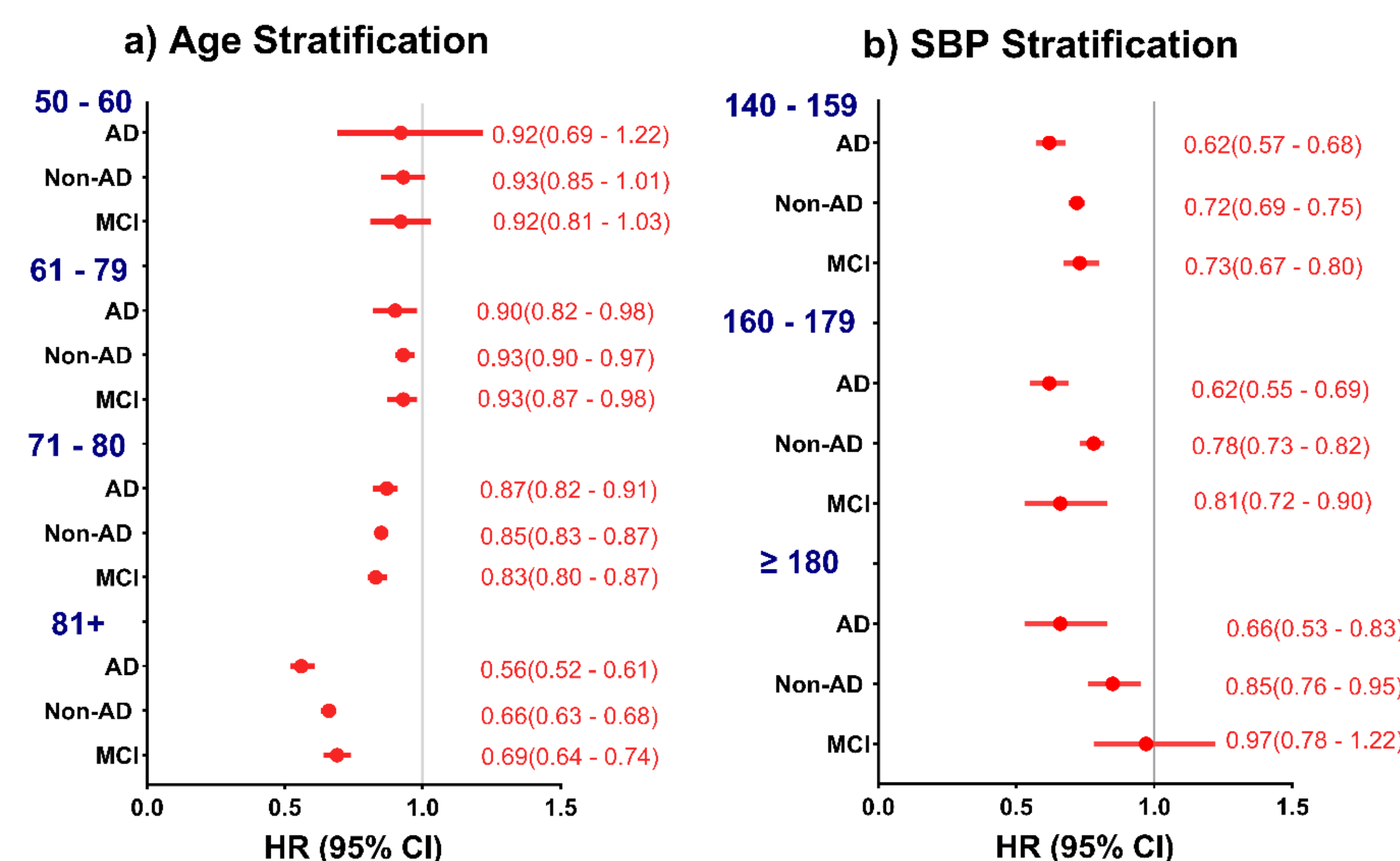
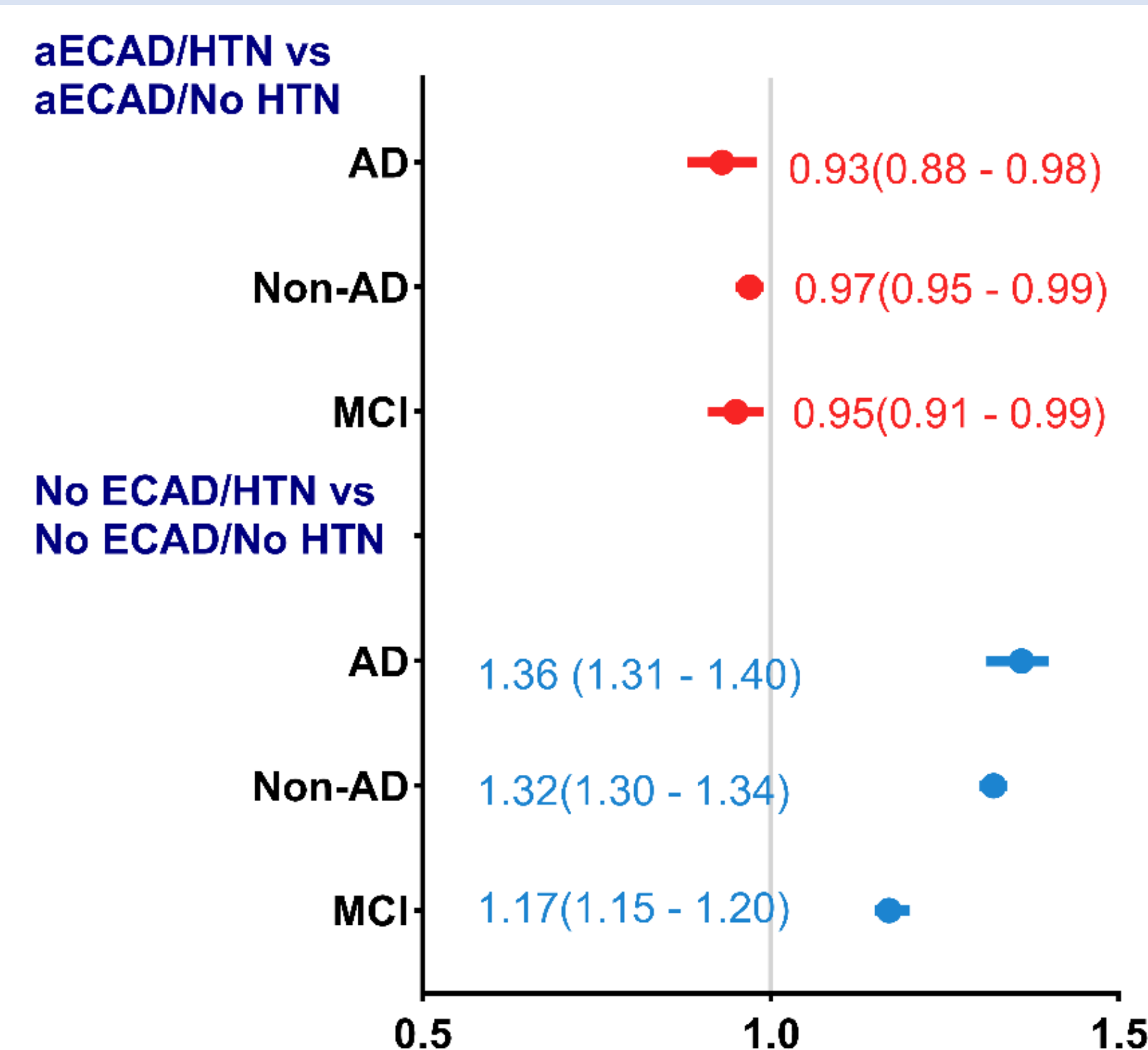
## Propensity Score Matching (1:1) & Cox-Proportional Hazard Models

## RESULTS

**Within aECAD patients, HTN is associated with significantly higher MoCA scores independent of potential confounders, CAM.**



**aECAD/HTN patients have lower risk of MCI, AD, Non-AD dementia, with strongest effects seen in the 81+ cohort. TriNetX.**



## RESULTS

**SBP 140-159 mmHg optimized protective effects without significant increase in MACE, TriNetX.**

| Cohort                    | Outcome       | aECAD/HTN<br>n (%) | aECAD/HTN<br>130-139, n (%) | HR (95% CI)      |
|---------------------------|---------------|--------------------|-----------------------------|------------------|
| SBP 140-159<br>(n=22,606) | MACE          | 9,085 (40.1%)      | 9,095 (40.2%)               | 1.01 (0.99-1.04) |
|                           | MI            | 3,614 (16.0%)      | 3,709 (16.4%)               | 0.99 (0.94-1.03) |
|                           | Heart failure | 11,478 (50.8%)     | 11,779 (52.1%)              | 0.98 (0.95-1.00) |
|                           | CKD           | 12,363 (54.7%)     | 12,550 (55.5%)              | 0.99 (0.97-1.02) |
|                           | Stroke        | 2,885 (12.8%)      | 2,820 (12.5%)               | 1.04 (0.99-1.10) |
| SBP 160-179<br>(n=11,964) | Mortality     | 5,273 (23.3%)      | 5,290 (23.4%)               | 1.02 (0.98-1.06) |
|                           | MACE          | 5,380 (45.0%)      | 5,019 (42.0%)               | 1.06 (1.02-1.10) |
|                           | MI            | 2,268 (19.0%)      | 2,106 (17.6%)               | 1.08 (1.02-1.14) |
|                           | Heart failure | 7,526 (62.9%)      | 7,352 (61.5%)               | 1.00 (0.97-1.03) |
|                           | CKD           | 8,333 (69.7%)      | 7,917 (66.2%)               | 1.05 (1.02-1.08) |
|                           | Stroke        | 1,801 (15.1%)      | 1,612 (13.5%)               | 1.10 (1.03-1.18) |
| SBP ≥180<br>(n=7,537)     | Mortality     | 3,034 (25.4%)      | 2,849 (23.8%)               | 1.07 (1.02-1.11) |
|                           | MACE          | 3,403 (45.2%)      | 3,057 (40.6%)               | 1.11 (1.07-1.16) |
|                           | MI            | 1,438 (19.1%)      | 1,274 (16.9%)               | 1.13 (1.05-1.21) |
|                           | Heart failure | 3,288 (43.6%)      | 2,952 (39.2%)               | 1.08 (1.03-1.14) |
|                           | CKD           | 3,611 (47.9%)      | 3,214 (42.7%)               | 1.11 (1.06-1.16) |
|                           | Stroke        | 1,189 (15.8%)      | 949 (12.6%)                 | 1.19 (1.09-1.30) |
|                           | Mortality     | 1,919 (25.5%)      | 1,769 (23.5%)               | 1.09 (1.03-1.15) |

## CEA mitigates protective effects of HTN in aECAD patients, TriNetX.

| Cohort                | Outcomes | aECAD/<br>CEA/HTN, n (%) | aECAD/<br>CEA/NoHTN, n (%) | HR (95% CI)      |
|-----------------------|----------|--------------------------|----------------------------|------------------|
| Age70-80<br>(n=6,748) | AD       | 143 (2.1%)               | 145 (2.2%)                 | 0.87(0.69-1.10)  |
|                       | Non-AD   | 685 (10.2%)              | 664 (9.8%)                 | 0.92 (0.83-1.02) |
|                       | MCI      | 230 (3.4%)               | 195 (2.9%)                 | 1.05 (0.87-1.27) |
| Age 81+<br>(n=1,317)  | AD       | 38 (2.9%)                | 37 (2.8%)                  | 0.85 (0.54-1.34) |
|                       | Non-AD   | 161 (12.2%)              | 180 (13.7%)                | 0.74 (0.59-0.91) |
|                       | MCI      | 44 (3.3%)                | 38 (2.9%)                  | 0.95 (0.62-1.47) |

## CONCLUSION

- In summary, hypertension appears protective in patients with aECAD for dementia-related outcomes, promoting the need for future clinical trials focusing on individualized BP goals and addressing cerebrovascular disease. Physiologically, we posit that hypertension could be a mechanism to improve cerebral perfusion in such patients.
- More broadly, these data further highlight cerebrovascular disease as relevant in brain health and aging.

## CONTACT

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