

Colombian Study of Aging (COSA) Pilot Biomarker Substudy (bioCOSA)

Neurodegenerative Biomarkers

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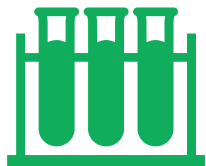
COSA Pilot Design



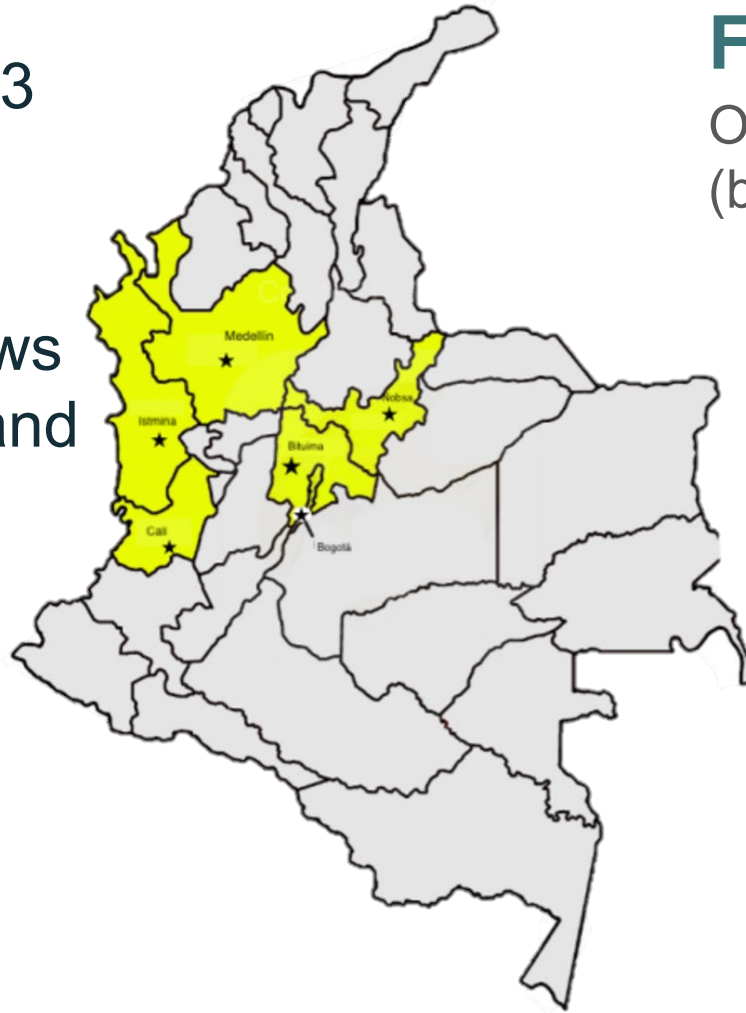
6 cities (municipios), 3 urban/3 rural



Face-to-face interviews with 740 adults 50+ and their spouses (36 proxies)



Subsample selected for performance-based assessment and **whole blood collection**



<https://cosaweb.org>

Field Period

Oct 29 – Dec 16
(blood draws 10/30-12/12)

Selection Criteria

COSA Participants



100 participants

Selected for blood draw based on cognitive status and/or area



84 Samples sent to Minnesota

bioCOSA Objectives

01

Establish field protocols & determine feasibility

- Transportation times and temperature (remote areas)
- Field challenges
- Alert values procedure

02

Assess acceptability

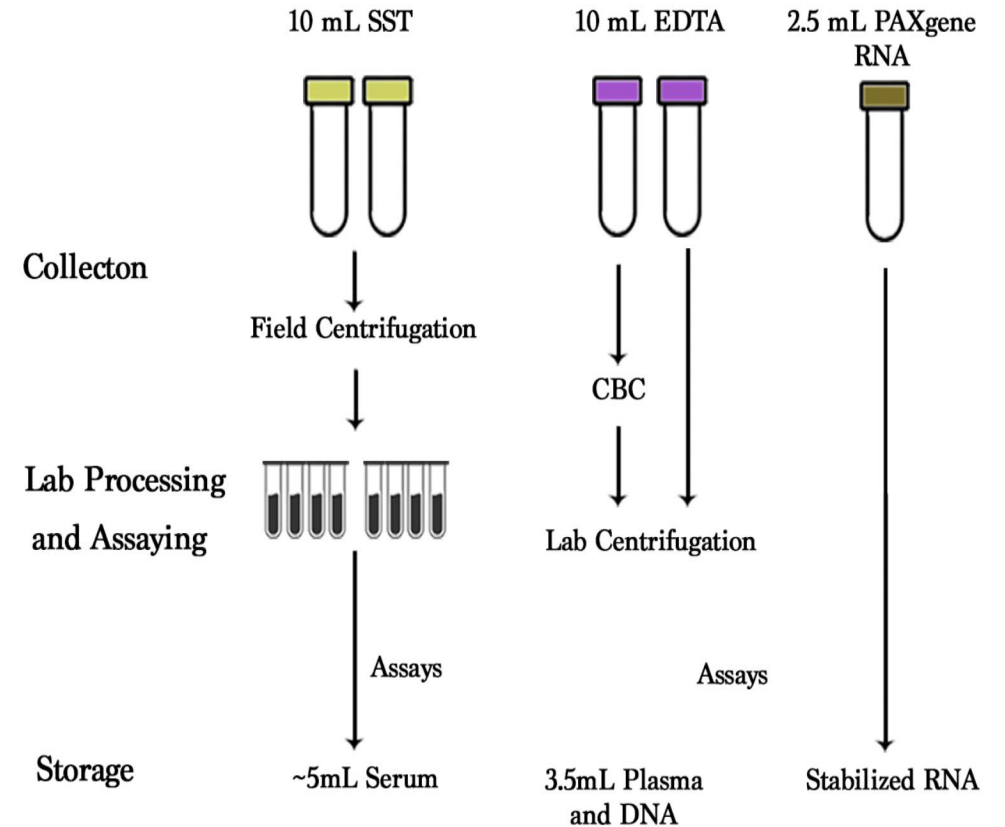
- Participation rates and reasons for non-participation
- Number of tubes collected

03

Examine biomarker quantity & quality

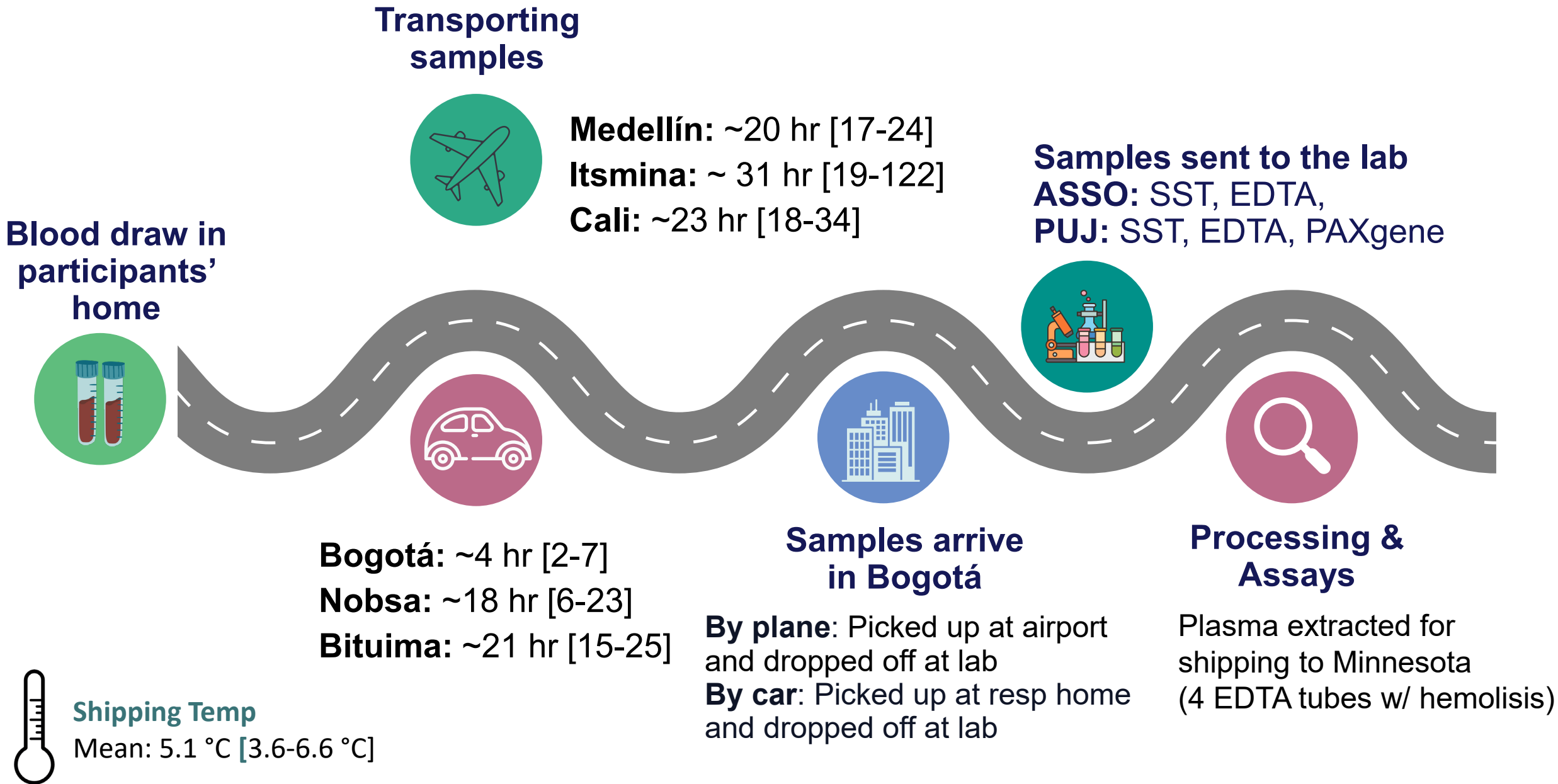
- DNA/RNA concentration
- Volume of plasma/serum
- Basic clinical assays
- **Neurodegenerative biomarkers**

bioCOSA Blood Collection Hematological Analysis (42.5 mL)



5-6 tubes were collected per participant:

- 2-3 SST tubes, 2 EDTA tubes, 1 PAXgene tube



Laboratory Processing

Instituto de Genética Humana (IGH), Pontificia Universidad Javeriana, Bogotá

- Plasma extracted from EDTA tubes

Samples shipped to University of Minnesota

- 85 samples (incl. 1 duplicate) shipped to the Advanced Research and Diagnostics Laboratory, University of Minnesota via World Courier

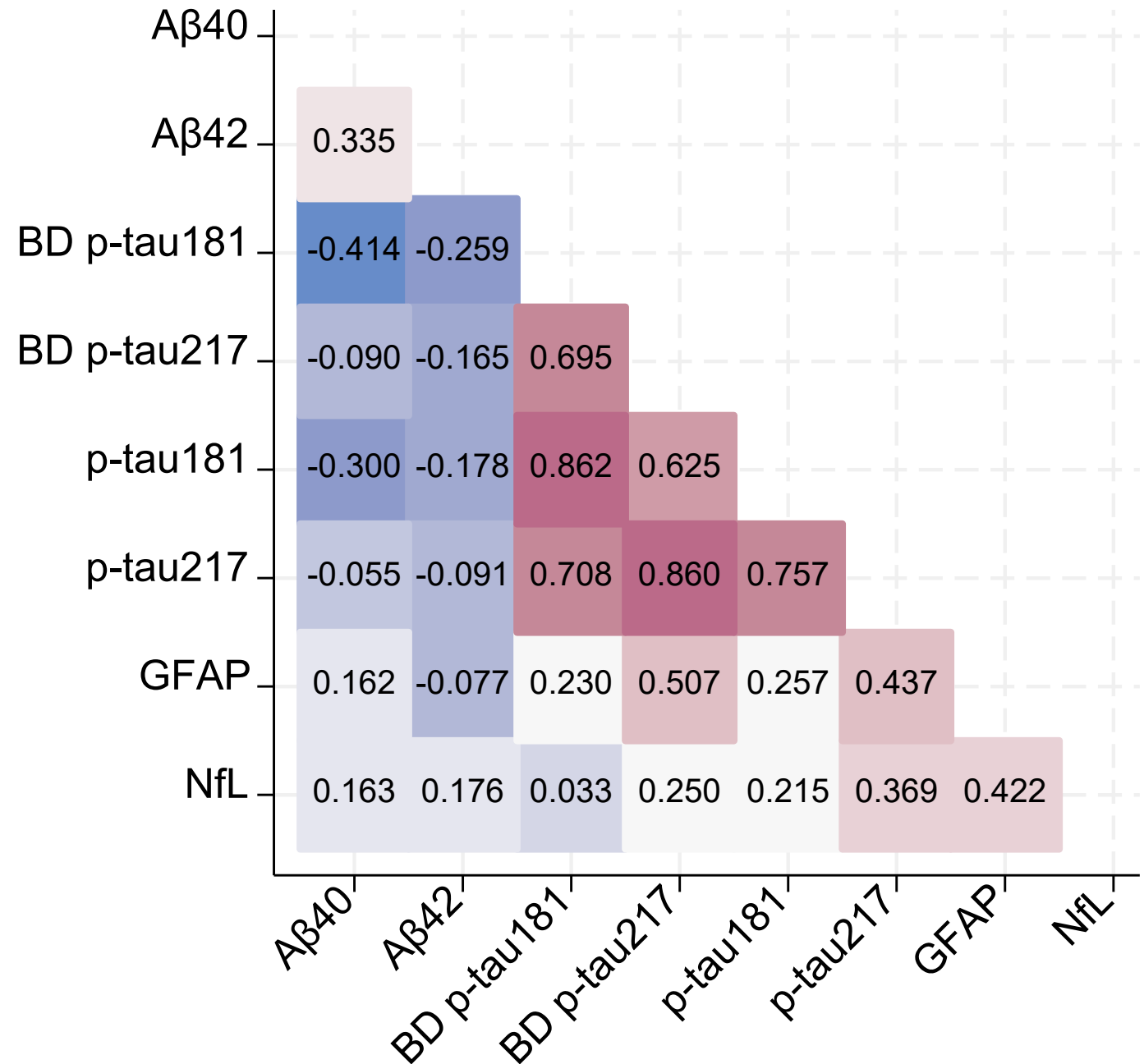


Sample Characteristics

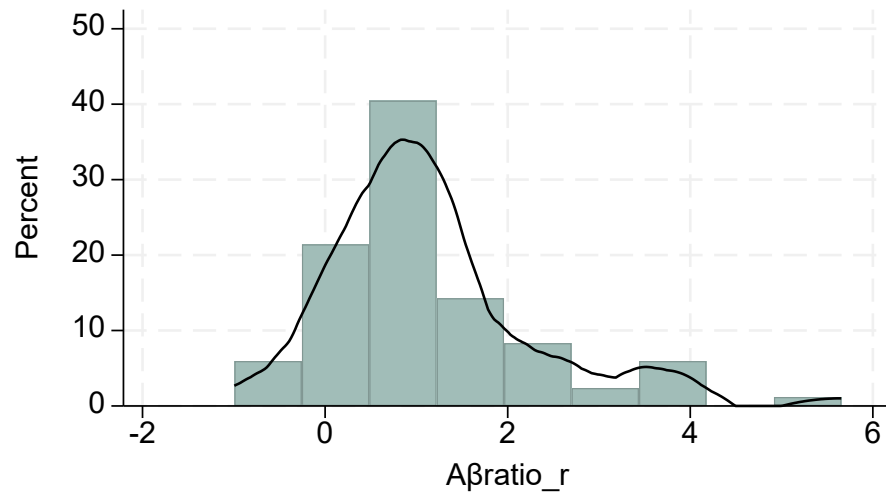
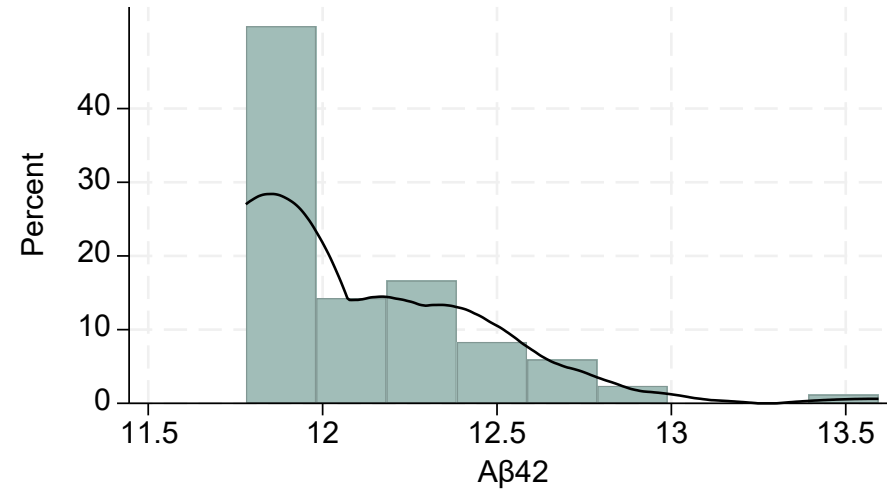
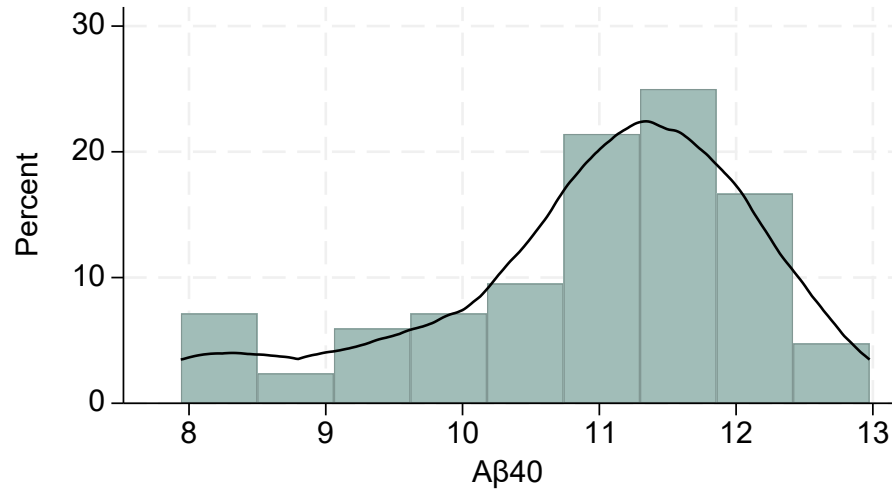
	Full COSA (n=738)	w/ AD Biomarker (n=84)
Age, mean (SD)	65.5 (10.1)	65.7 (8.2)
Female, %	63.1	60.0
Education, %		
None	7.2	8.3
Primary or less	43.8	44.1
High School	34.8	36.9
Technical or more	14.2	10.7
Race/ethnicity, %		
Black/Afro-Colombian	16.7	32.9
White	29.5	25.9
Mulato/Mestizo	37.0	28.2
TICS cognitive status, %^a		
Normal	58.5	35.3
CIND	36.4	52.9
Dementia	5.1	11.8

Good correlation among markers

- Samples were analyzed on the NuLISA (Alamar) platform
- Values are reported in relative (NPQ) units and are proportional to protein abundance, but not directly interpretable as concentrations (e.g., Quanterix Simoa).
- QC metrics suggest generally strong assay performance, most metrics comfortably met recommended thresholds.



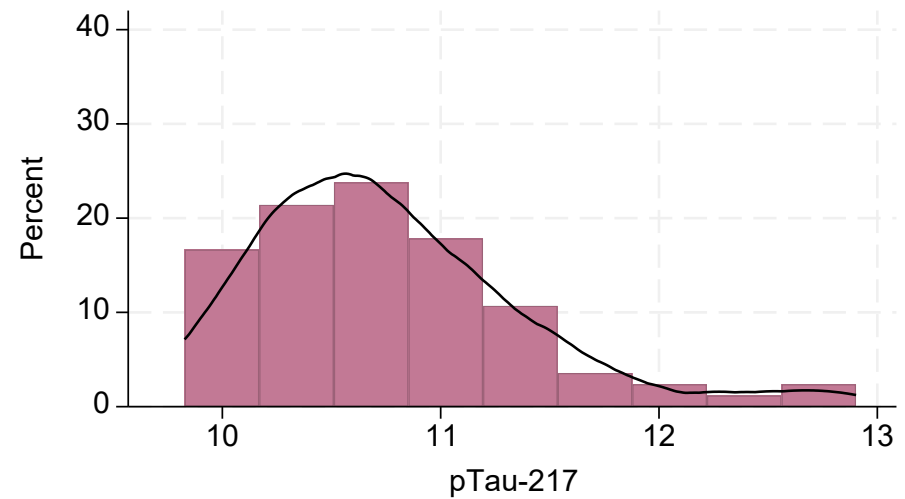
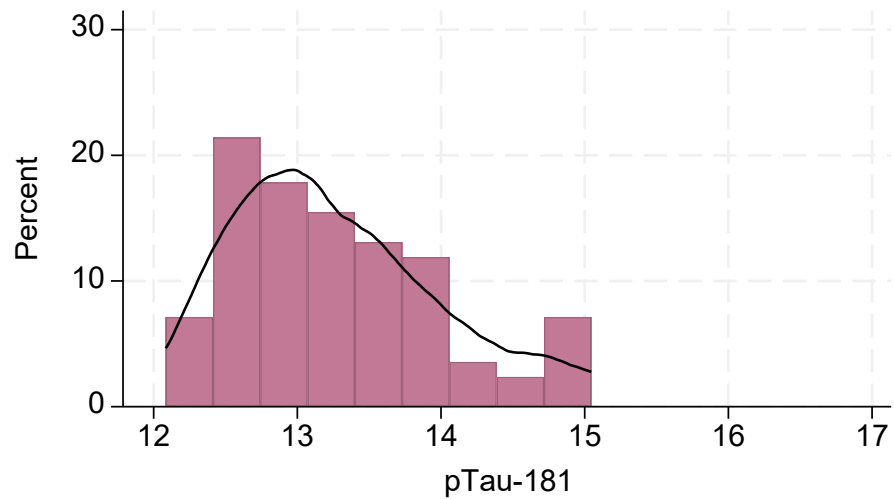
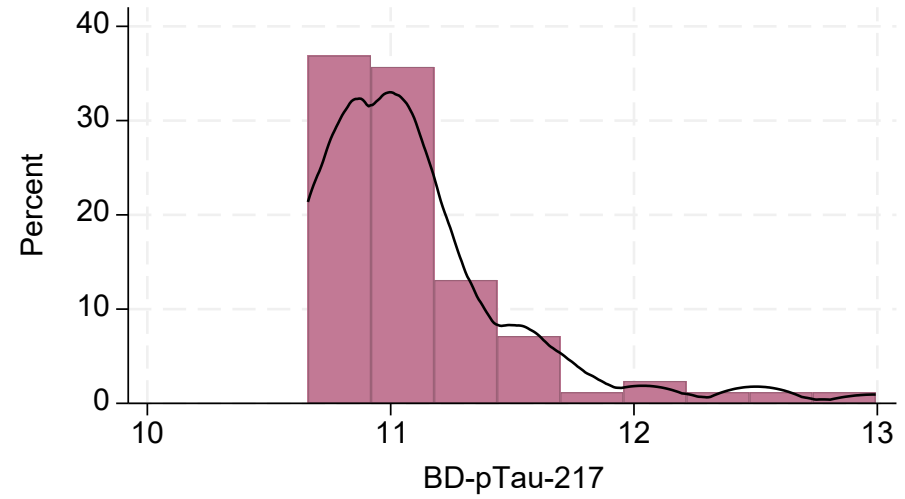
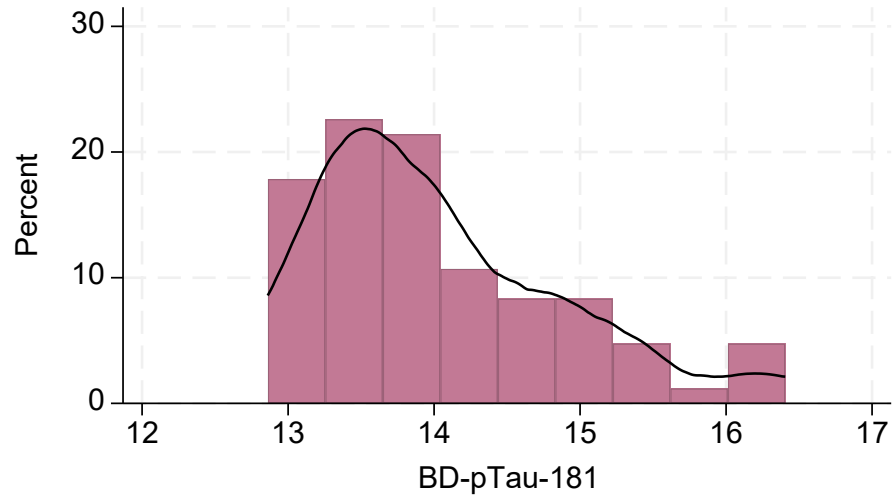
A β 40/ A β 42 Distributions



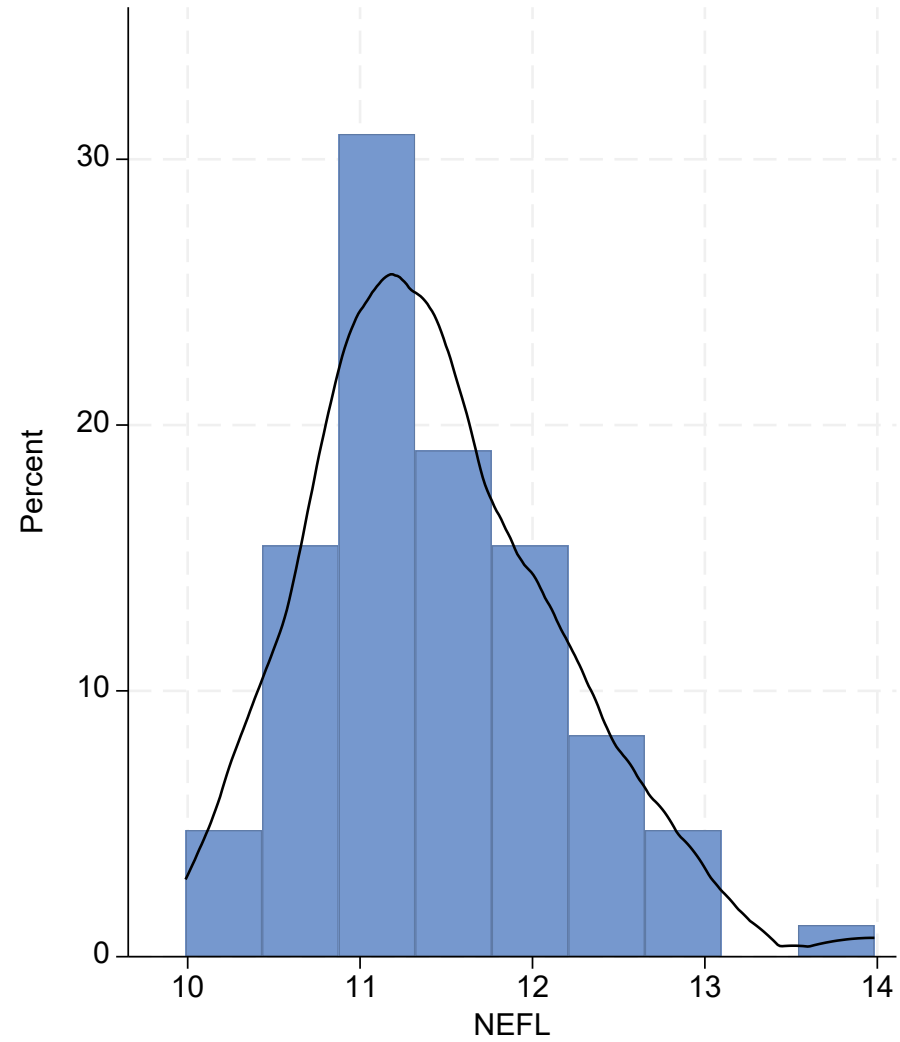
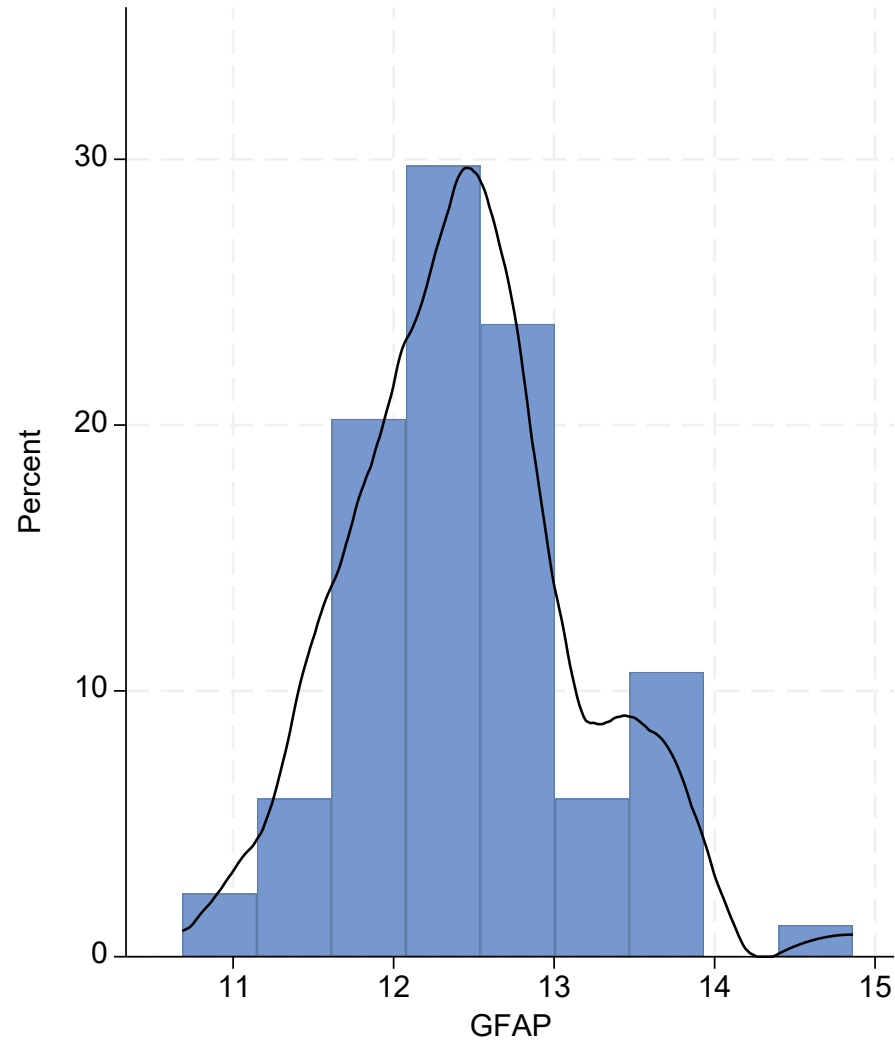
❖ NPQ values on log-2 scale

- A β 40: 4 samples below LOD (7.94)
- A β 42: 31 samples below LOD (11.78)

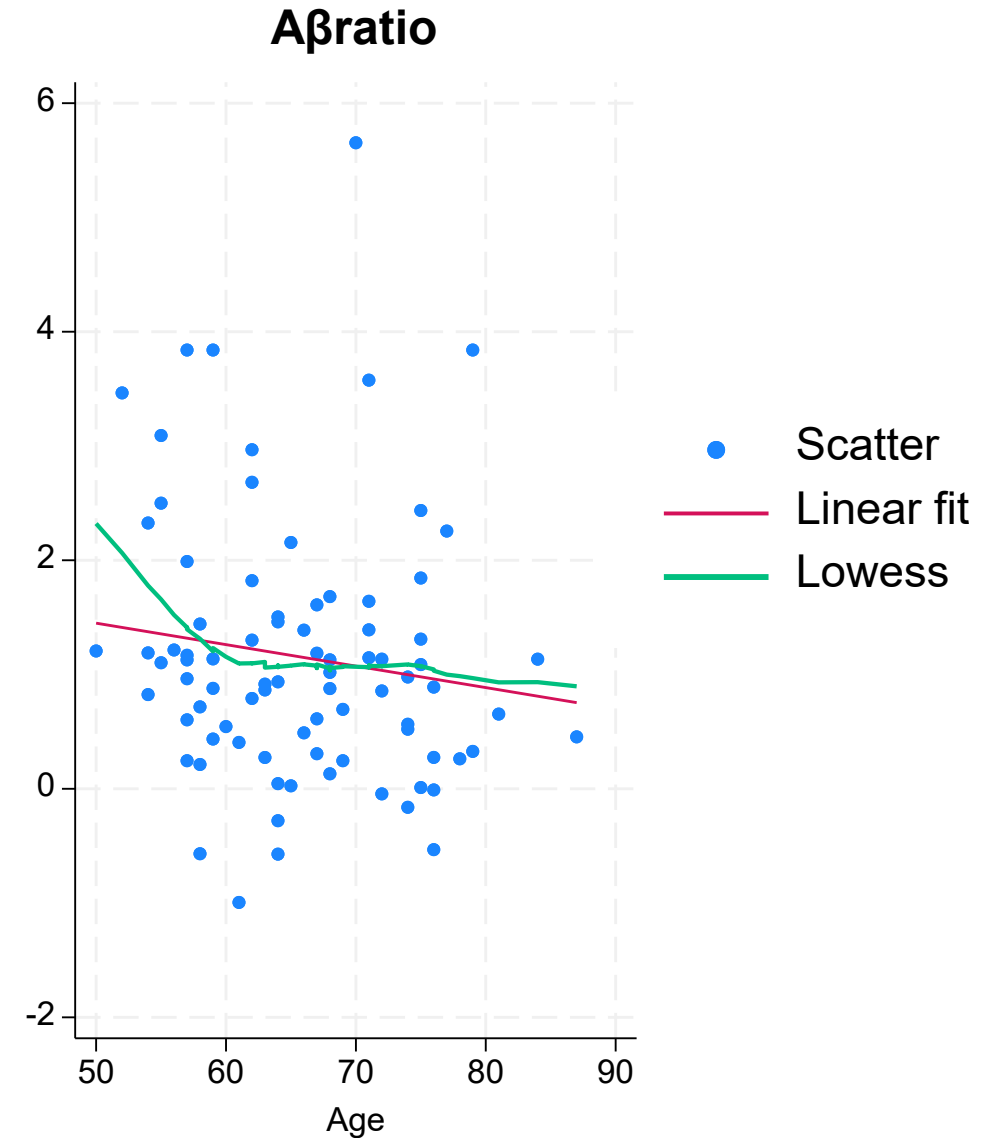
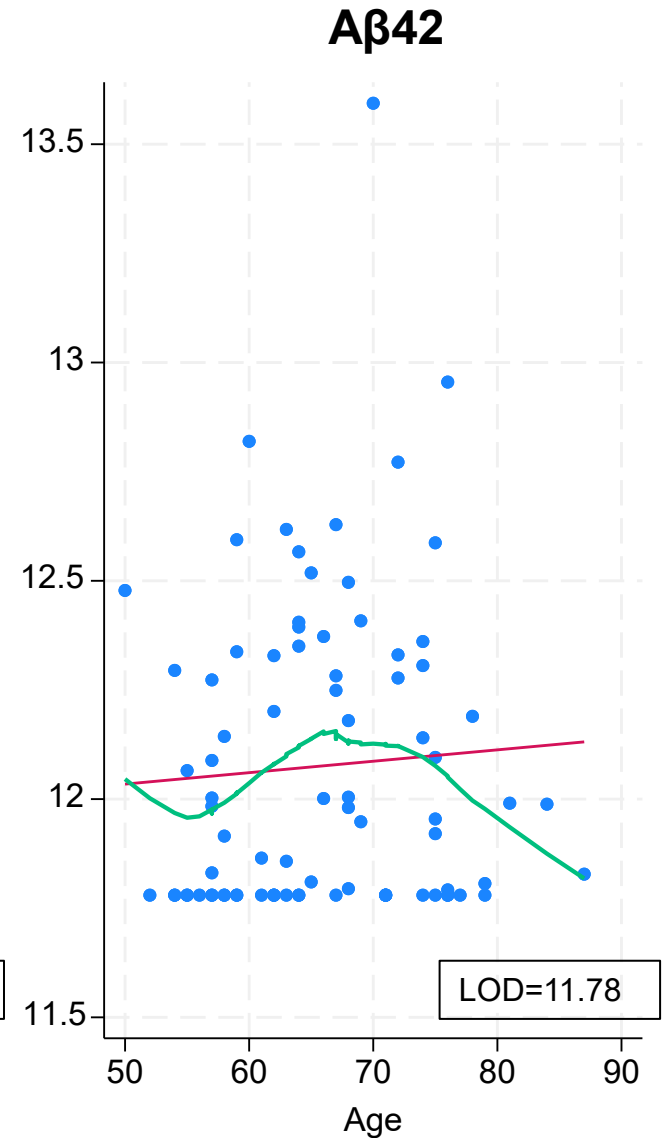
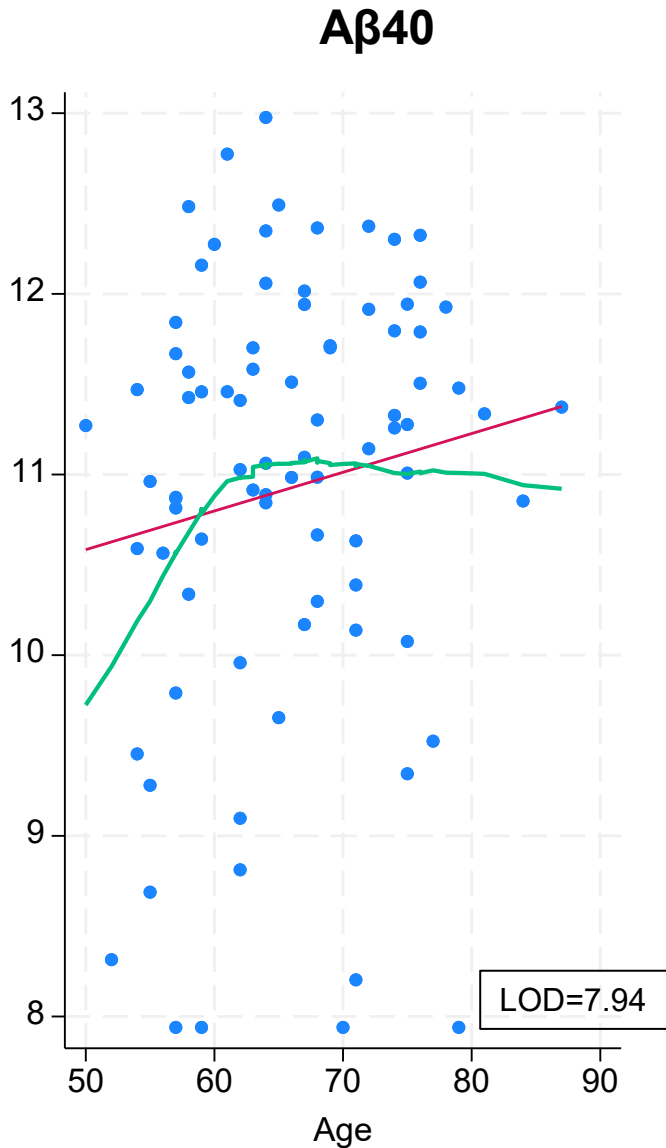
pTau Distributions



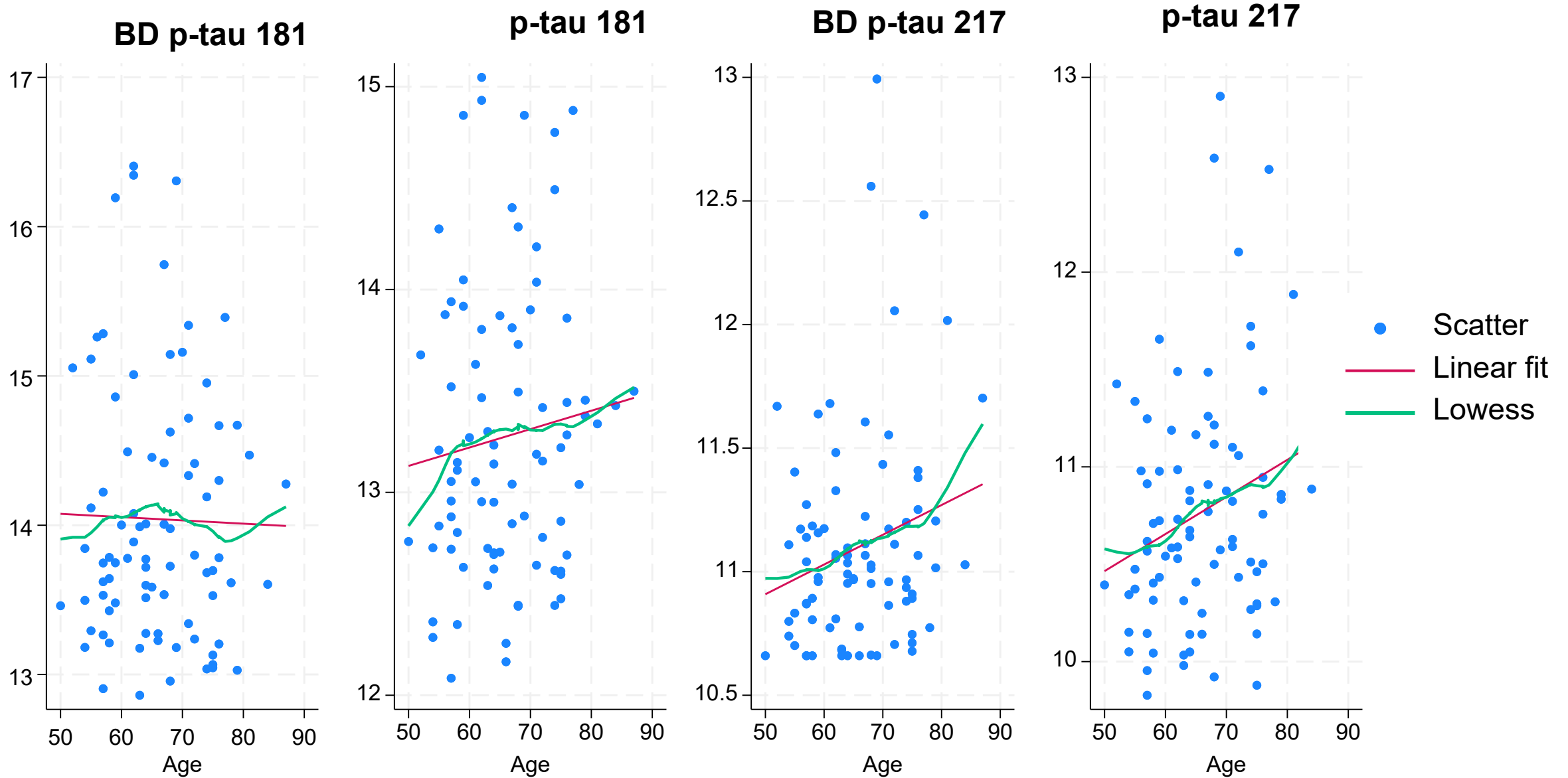
GFAP and NfL Distributions



A β – Age Associations

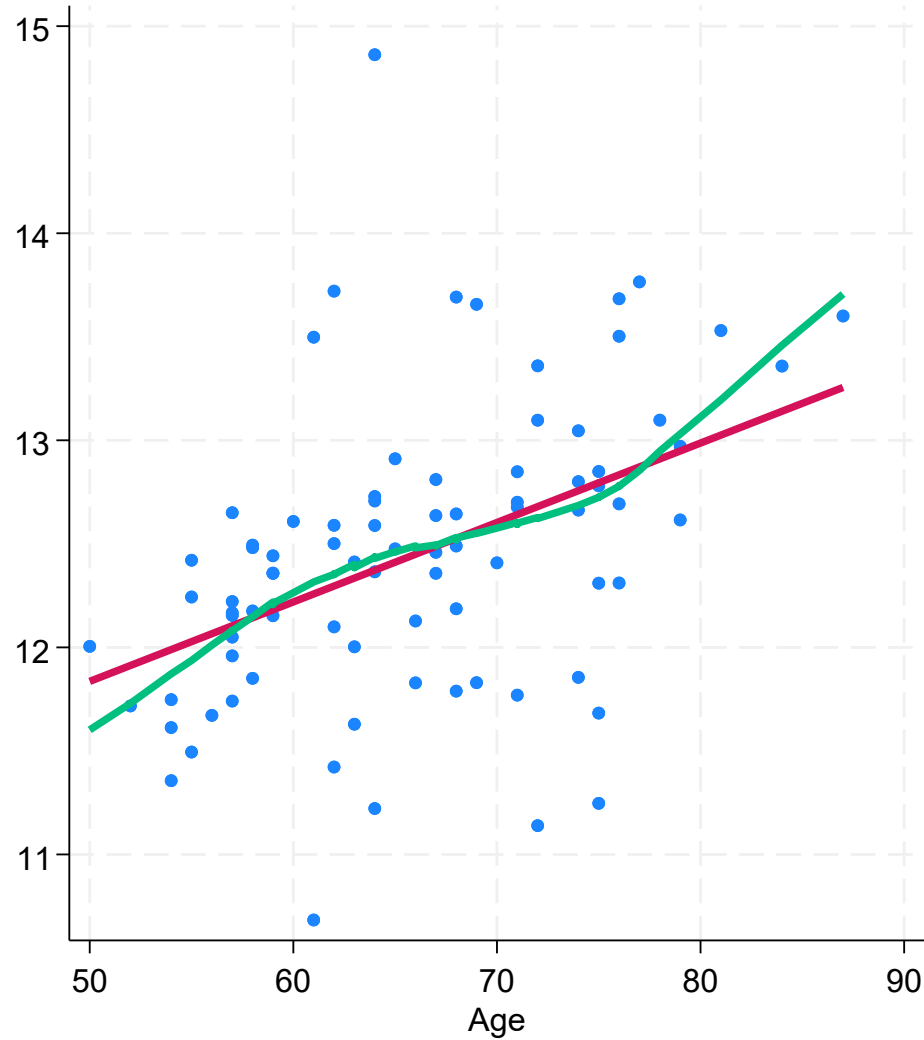


p-tau – Age Associations

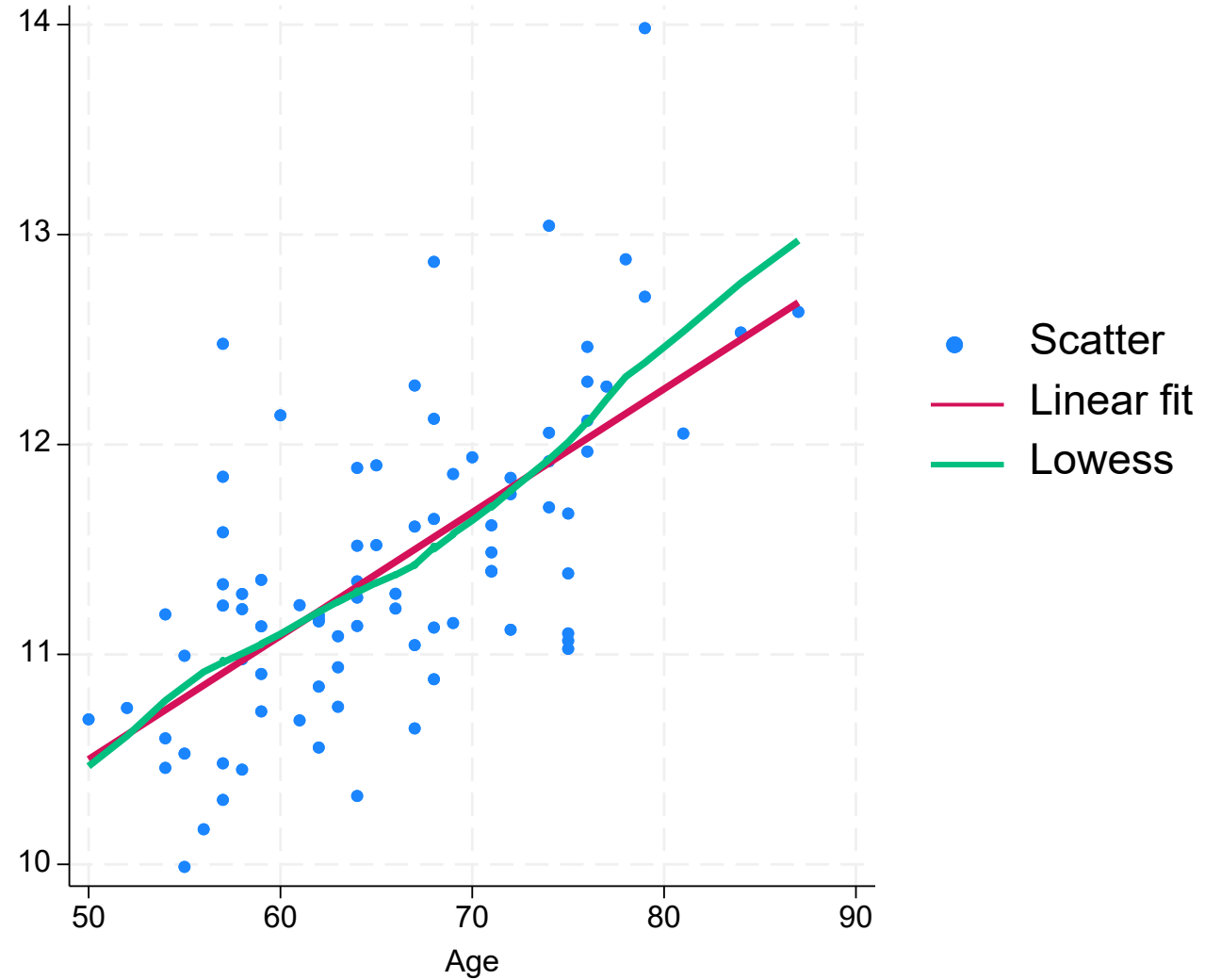


GFAP/NFL – Age Associations

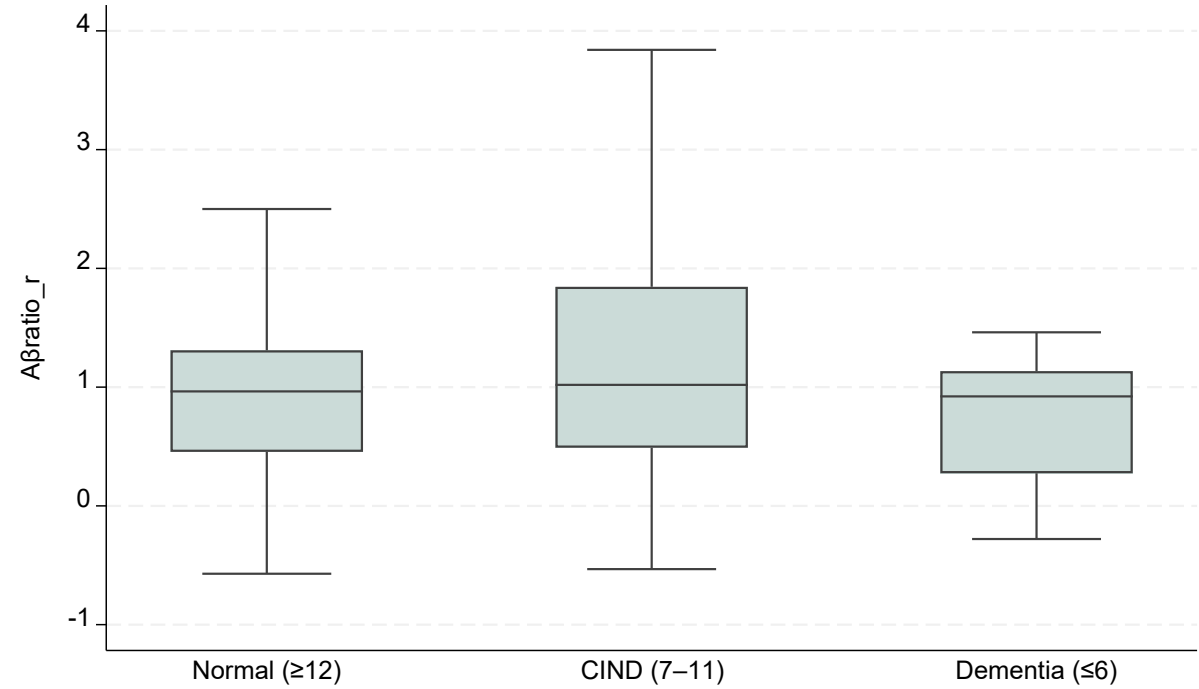
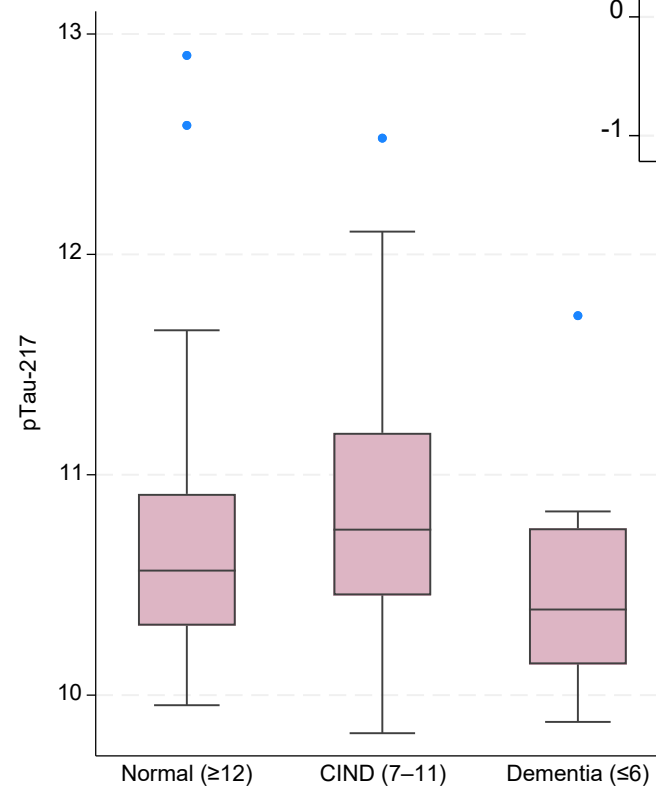
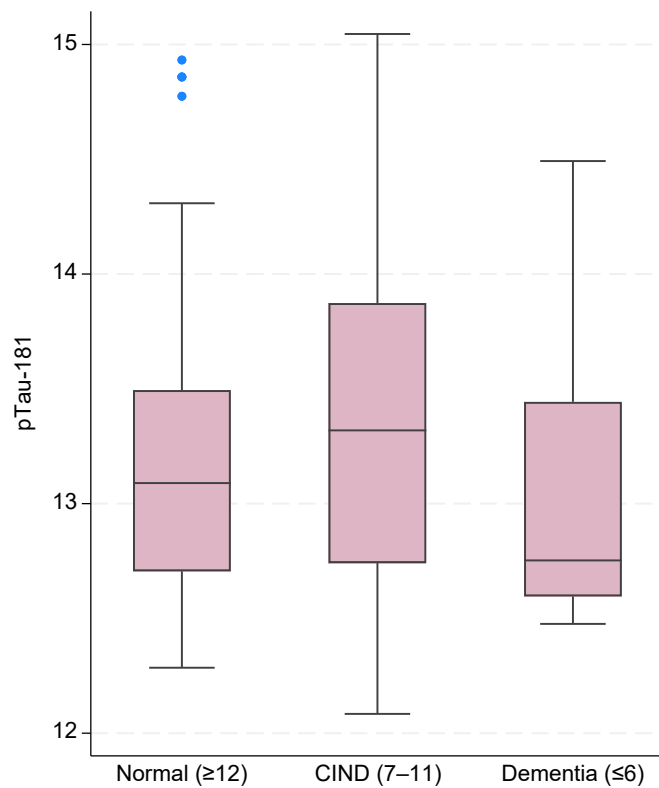
GFAP



NFL



A β /pTau Associations with Cognitive Status



Cognitive status based on TICS score, using Langa-Weir classification

Some cases were imputed to a category

Conclusions



Field challenges, but manageable

High acceptability among respondents

Lab processing and international shipping worked out

Biomarkers generally look good

www.cosaweb.org

