



CDRSB Trajectories in a real-world Clinical Context exhibit Fast Progression Rates despite mixed MCI and Dementia recruitment

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Aim

- To determine whether progression patterns observed in research cohorts are representative of those seen in routine care, particularly in the early symptomatic stages of disease.
- These stages are a major focus of prognostic modelling.
- Establishing whether trajectories observed after clinical presentation are comparable across research and clinical settings is important for interpreting biomarker studies and progression models in practice.

Methods

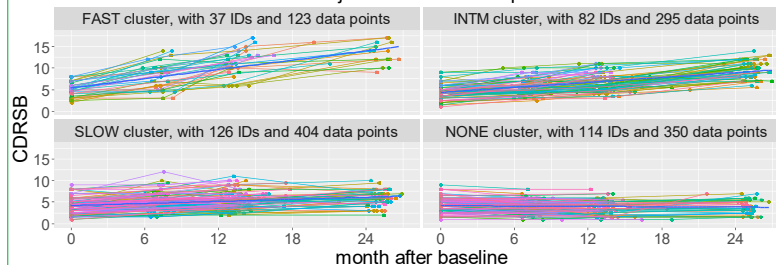
- Difference-from-baseline 'delta' CDRSB trajectories from ADNI (MCI = 989; AD = 359) and BRAIID (n=284) were partitioned into progression groups using longitudinal clustering.
- delta-CDRSB trajectories were then resampled and re-clustered to test cluster allocation stability.
- Key summary statistics were progression group size, rates and variance, based on group data point ensembles.

Data

ADNI is a multi-decadal longitudinal observational study, based in multiple centres in North America, designed to validate biomarkers for use in Alzheimer's Disease, supporting clinical trial development, while **BRAIID (BRain Imaging In Dementia)** is a UK-based observational cohort study, embedded in routine NHS care, recruiting patients undergoing clinical investigation for cognitive complaints. The BRAIID study combines baseline imaging and other assessments with long-term follow-up, to identify factors that improve individual prognosis and clinical care interventions.

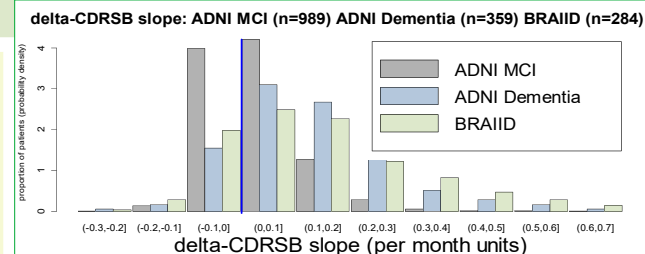
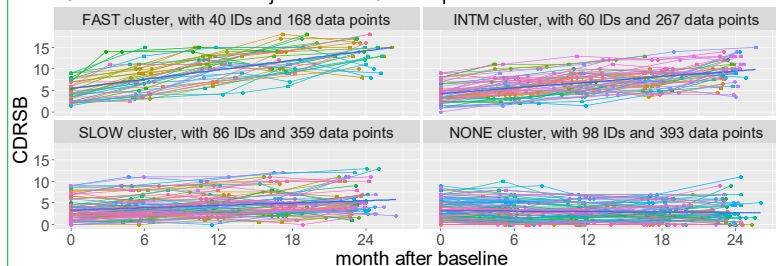
ADNI single-shot clustering progression groups

359 individual ADNI Dementia trajectories: 1172 data points

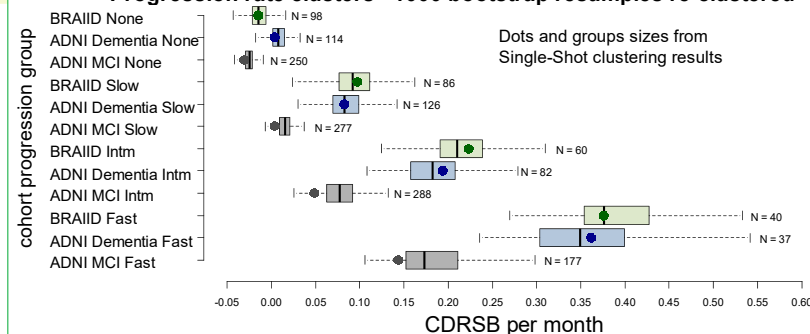


BRAIID single-shot clustering progression groups

284 individual BRAIID trajectories: 1187 data points



Progression rate clusters - 1000 bootstrap resamples re-clustered



Results and Clinical Implications

- Despite substantial differences in recruitment strategy, clinical context, baseline severity distributions, and follow-up structure, progression rate patterns and cluster characteristics were strikingly similar between the ADNI dementia cohort and the BRAIID clinical cohort.
- In contrast, the ADNI MCI cohort was markedly different, with a substantially larger proportion of trajectories showing minimal progression over two years, indicating that research cohort data can inform interpretation of progression in clinical populations, while highlighting limits to generalisation across diagnostic groups.