

Points to Note - ADNI Subject Selection

From looking at several papers that segregate ADNI subjects into CN, MCI and AD, the following are the conditions that occur most frequently, for **subject classification and selection**:

1. **Baseline Diagnosis determines the cohort:** Division of subjects into 3 categories is always on the basis of the baseline (month 0) diagnosis. Thus, irrespective of whether a subject converts to a different diagnosis later on, the cohort it belongs to stays fixed.
2. **Longitudinal Analysis** Papers generally set a **minimum number of visits** a subject should have, to be included. In most cases, this cut off is simply 2 visits, to make sure most of the data is retained.
3. **Cohorts to Include:** Most fMRI papers use the **ADNI2 and ADNI3 cohorts**, and leave out the ADNIGO cohort. I couldn't find a reason as to why this is the case.
4. **Defining MCI, AD and CN:**
 - a. **For longitudinal Analysis, where only AD and CN are analyzed:** Subject must remain in their baseline diagnosis across all visits, till the last known visit.
 - b. **For Analysis where MCI-C and MCI-NC are also analyzed:** Some papers set an exact year at which they check if the baseline MCI subject has switched to AD e.g. Year 3. Others check until the last known visit.
 - c. **Cognitive scores serve as exclusion criteria:** There are a common set of criteria for the **CDR** and **MMSE** scores of subjects that must be checked over and above the diagnosis assigned by ADNI. Additionally, several papers also have set constraints for Weschler's Memory Scale - Logical Recall (WMS - LR) which are modulated by years of education (YOE).
 - i. **AD:** MMSE = 14-26, CDR = 0.5 or 1
 - ii. **MCI:** MMSE = 23-30, CDR = 0.5
 - iii. **CN:** MMSE = 24 -30, CDR = 0
5. **Miscellaneous Criteria depending on specific aims:**
 - a. **Minimum Age:** Some papers specify a cut off age, and only consider scans above it, e.g. > 65 years
 - b. **Length of fMRI:** Some papers use only those scans that are shorter than a set threshold. E.g. 2.5 minutes.

For our analysis:

Based on these criteria, I am thinking of including all subjects who have **2 or more scan visits**, belong to the **ADNI2 and ADNI3 cohort**, and have a **baseline diagnosis of MCI, AD or CN** (not SMC or Patient).

Additionally, **AD and CN subjects should remain so consistently across all visits**. **MCI-C subjects should remain in AD consistently**, once they convert to AD, and **MCI - NC subjects should stay in MCI across all visits** till the last known visit.

Additionally, the **MMSE and CDR scores should correspond with the diagnosis** at each visit.