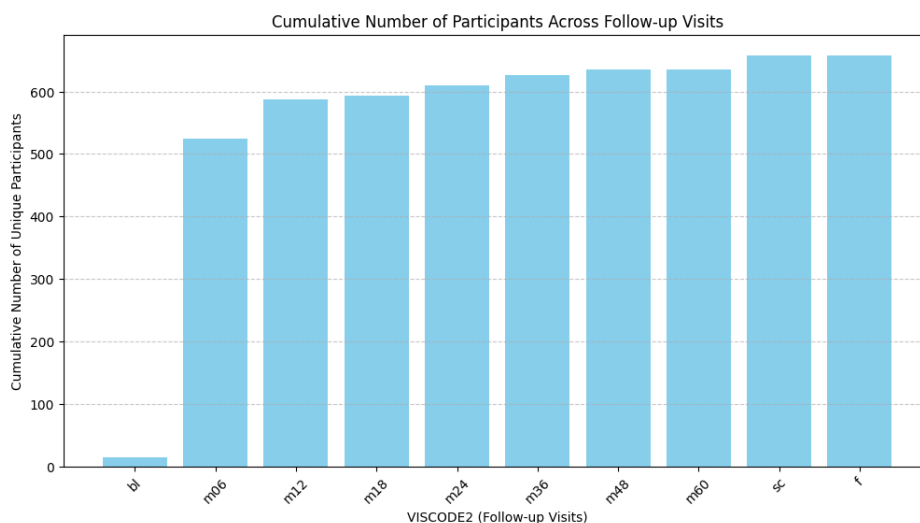


Preprocessing

Questions to Answer:

1. UCSFFSL File: Analyzing timestamps using VISCODE and calculating visitation durations
 - a. How are the visitations aligned with each participant
 - b. What is the average duration between baseline and follow up visits?
 - c. How to handle large gaps between visits?
2. Participant Mapping: Mapping participants with age, baseline symptoms and other sociodemographic features
 - a. Do participants with insomnia show distinct demographic profiles compared to those without symptoms?
3. Transition analysis: Plotting alluvial plots, visualizing the transitions between stages during uniform visit points.
 - a. Are certain diagnoses more likely to progress or remain stable?
 - b. Can we ensure uniform visit points?
4. Cognitive scores: Incorporating cognitive psychometric scores into the analysis.
 - a. Finding relationship between sleep disturbances, sociodemographic factors and psychometric tests.

Results:

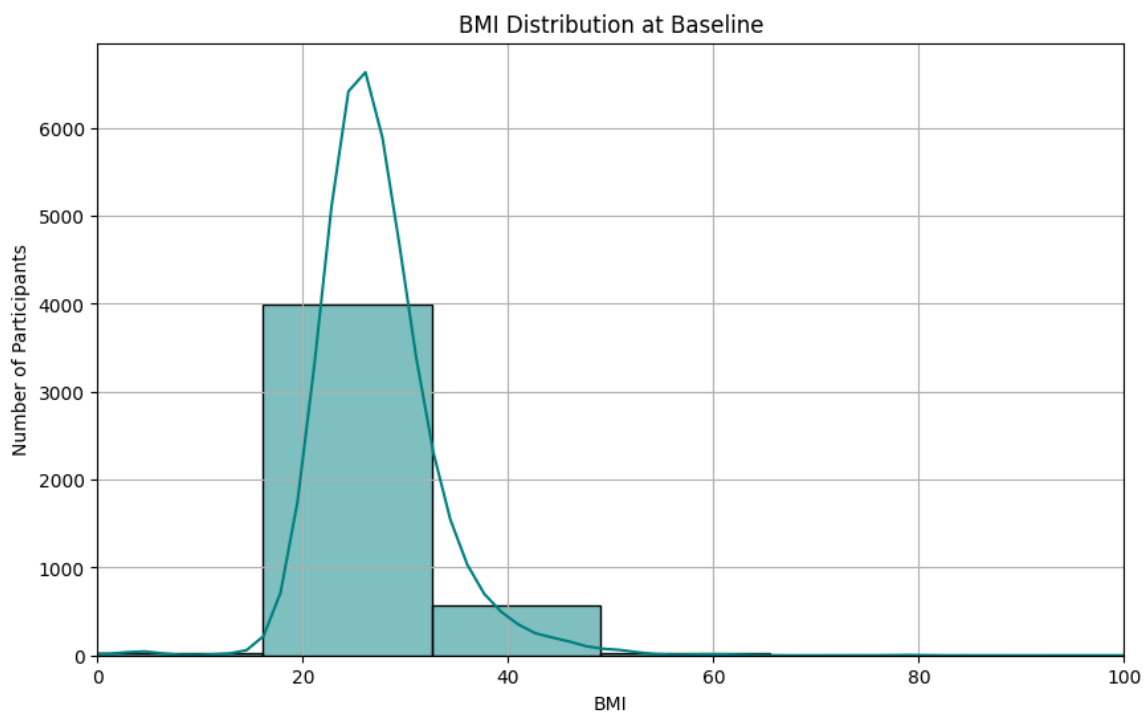


The cumulative distribution of visits for each participant.

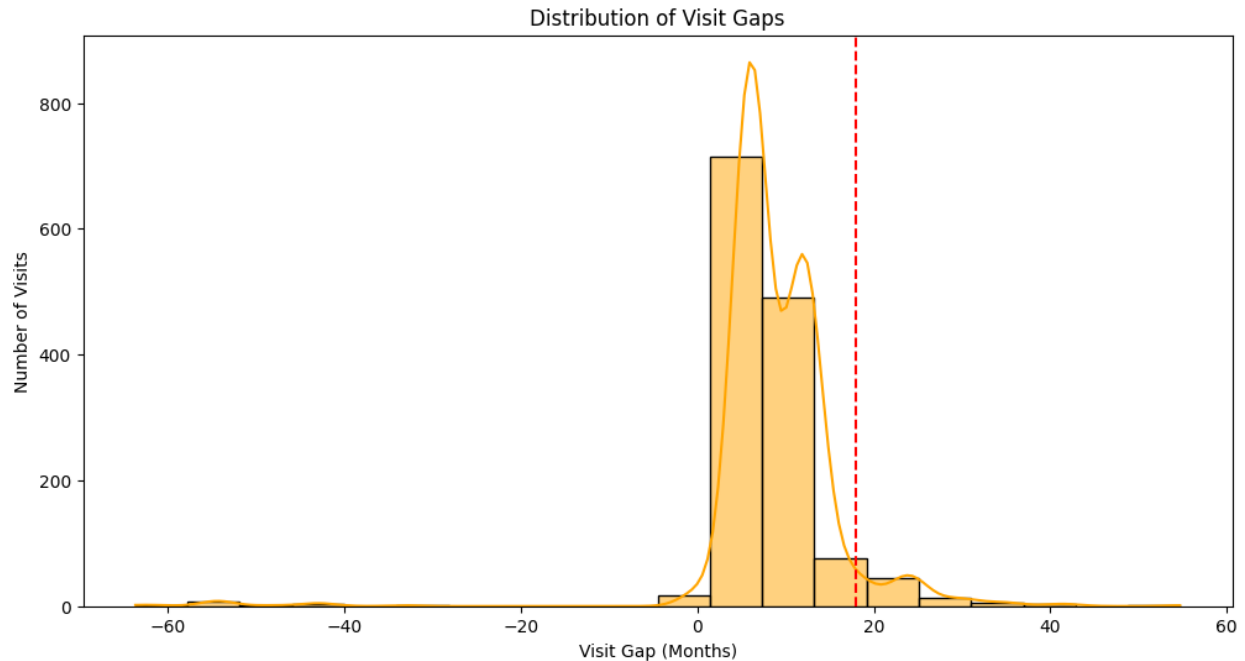
Total Number of participants with all MRI volumes: 658

* Condition: Complete Status and Passing the Overall Quality Control.

	VISCODE2	Cumulative_RIDs
0	bl	15
1	m06	524
2	m12	587
3	m18	594
4	m24	610
5	m36	626
6	m48	635
7	m60	635
8	sc	658
9	f	658



BMI was calculated using weight and height from screening and baseline visits only to access participant's baseline health.



Visit gaps were analyzed to identify participants with irregular follow-ups. A gap >18 months was used as a threshold for flagging.

Participants generally followed the expected 6-12 month visitation schedule. Irregular follow-ups accounted for approximately 80 participants.

BMI distribution:

	RID	BMI
count	16260.000000	4601.000000
mean	3473.120726	27.434262
std	2697.760414	8.646170
min	2.000000	-0.378233
25%	891.000000	23.807228
50%	4149.000000	26.453859
75%	5139.250000	29.749697
max	10498.000000	328.903405

To Select the Optimal Visit breaks, Number of months varied from 0 to 60.

Month 0 was excluded due to the number of participants being only 16, and Months after 36 were also excluded due to the number of participants gradually reducing.

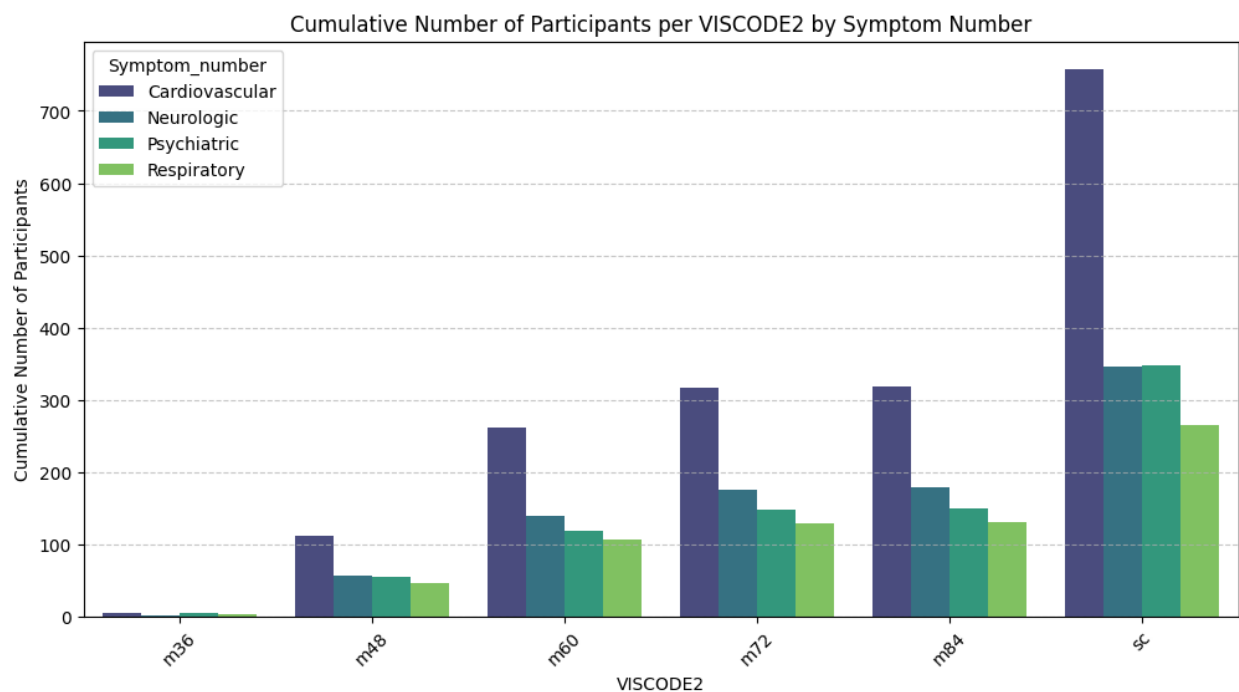
Number of Visits	Number of participants	Baseline Diagnoses
Atleast Month 6	522	LMCI: 253, AD: 105, CN: 164
Atleast Months 6 and 12	422	LCMI: 202, AD: 78, CN: 142
Atleast Months 6, 12 and 24	305	LMCI: 138, AD: 48, CN: 119
Atleast Months 6, 12, 24 and 36	169	LMCI: 87, CN: 82

To get the maximum sample size, transitions were also watched:

	Baseline_DX	Number_of_Conversions	Conversion_Rate (%)
0	AD	3	2.521008
1	CN	17	8.585859
2	LMCI	318	100.000000

Highest conversion rates occur between Months 6 and 24.

Choosing follow-up visits at Months: 6, 12 and 24 captures the majority of conversions, balancing data availability and participant retention.



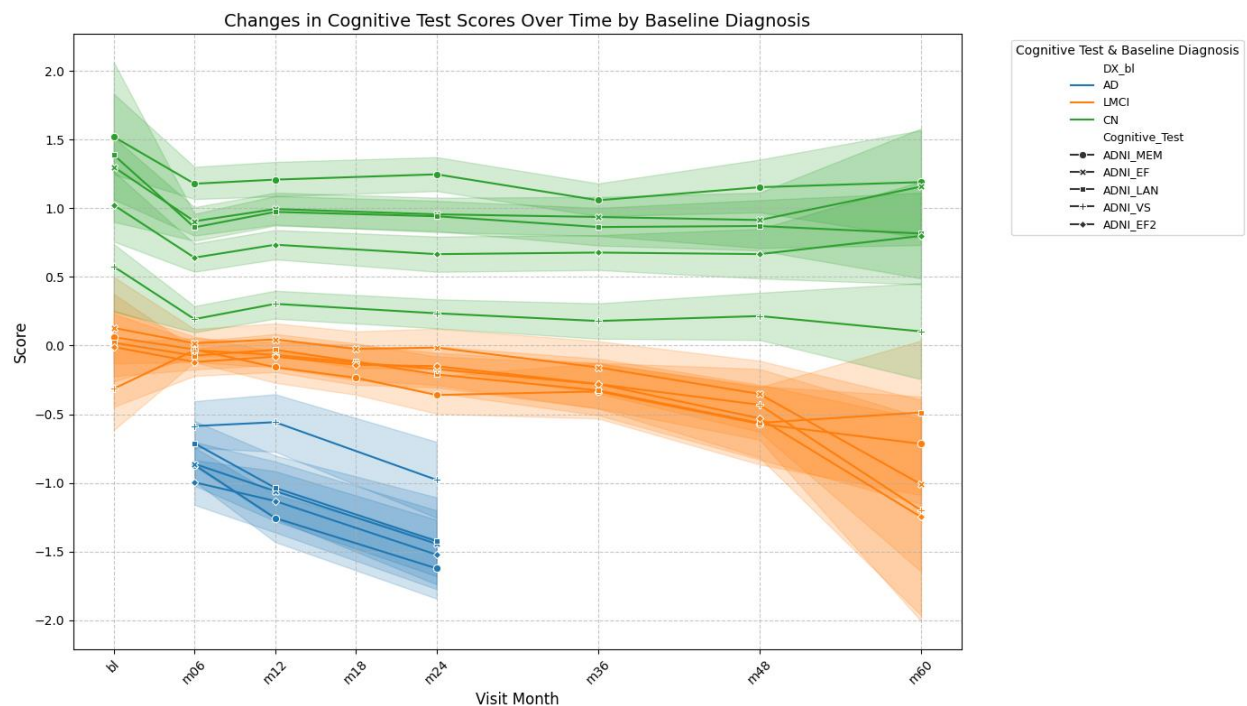
Baseline Symptoms were also taken for the MRI available participants. Seems like many participants have multiple Symptoms during baseline.

From those 635 participants, 126 participants were diagnosed to have Insomnia. Severity: Mild, Moderate, and Severe.

Counts: Mild: 93, Moderate: 28 and Severe: 7.

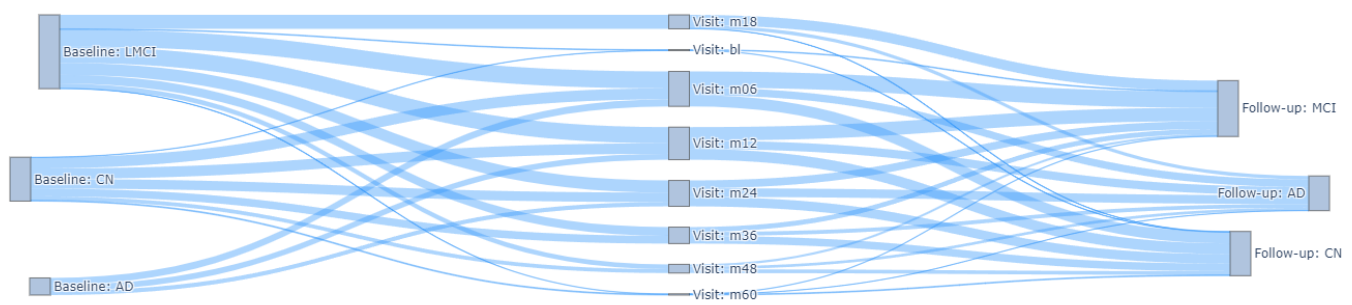
*Note: 2 Participant RID (553 and 1186) have Converted:

553: Mild to Severe, 1186: Moderate to Severe.



The participant's Psychometric tests in different subgroups.

Alluvial Plot: Baseline Diagnosis to Follow-up Diagnosis Across Visits



Alluvial plot of Baseline diagnosed participants to conversion with respective to the follow up visits.