**ADNI Progress Report 2/10/2025** \*All data being considered is currently only ADNI 1

**Domains Already Constructed:**

Profile – Stagnant traits of the patients recorded on their first visit

Visit – Measurements taken each visit to monitor symptoms

Progression – Each patient’s visits considered together as a full sweep of disease progression

**Domains Under Consideration:**

Scans – Uses the MRI images processed through a convolutional neural network that Spencer was working on

Freesurfer – Takes the precomputed measurements of different brain weights and things as done by UC San Francisco

Neuropathy – Measurements taken during the biopsy for the ~100 patients who died and consented to it

Events – A record of adverse events that could have contributed to someone’s progression, including medications taken

**Response Variables:**

DX\_bl – the experimental group that patients were assigned during onboarding

0 = Cognitively Normal

3 = Mild Cognitive Impairment

4 = Alzheimer’s Disease

DIAGNOSIS – the diagnosis given on a particular visit

1 = Cognitively Normal

2 = Mild Cognitive Impairment

3 = Dementia

LAST\_DX – the latest DIAGNOSIS that we have for the patient

TOTAL\_13 – the score that the patient got on the ADAS-Cog 13-item scale (Alzheimer’s Disease Assessment Score) test, that includes 13 measurements referred to in the variables section as “Q1SCORE” and the like, ranges from 0-85

Score Ranges from 0 – 85, higher indicates greater severity

**Current Single Dataset Validation Scores (the Scores to Beat):**

|  |  |  |
| --- | --- | --- |
|  | DX\_bl | LAST\_DX |
| Profile | 42.4 | 50.9 |
| Visit | 72.2 | 68.4 |
| Progression | 79.8 | 77.6 |

**Current Out of Bag Scores for Manifolds Run (How Good the Model Thinks it Is):**

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Domains Matchup | With DX\_bl/TOTAL13 | With LAST\_DX/DX\_bl |
| MASH | Profile - Visit | 55.6 | 59.1 |
| Profile - Progression | 51.7 | 55.8 |
| Visit - Progression | 61.4 | 63.2 |
| SPUD | Profile - Visit | 51.3 | 40.7 |
| Profile - Progression | 53.3 | 51.8 |
| Visit - Progression | 51.9 | 43.8 |

Profile Variables

|  |  |
| --- | --- |
| Variable | Nickname |
| PHS | Polygenic Hazard Score |
| CIR | Cumulative Incidence Rate |
| PTGENDER | Gender |
| PTDOBYY | Year Born |
| PTHAND | Handedness |
| PTEDUCAT | Level of Education |
| PTPLANG | Primary Language |
| PTETHCAT | Ethnic Category |
| PTRACCAT | Racial Category |
| PTIDENT | Gender Identity |
| PTENGSPK | Monolingual English |
| PTETHCATH | Latin Country of Origin |
| MOTHDEM | Mother had/has Dementia |
| MOTHAD | Mother had/has Alzheimers |
| MOTHSXAGE | Approximate age Mother's symptoms started |
| FATHDEM | Father had/has Dementia |
| FATHAD | Father had/has Alzheimers |
| FATHSXAGE | Approximate age Father's symptoms started |
| DX\_bl | Diagnosis at Baseline |
| AGE | Age at Baseline |
| PTMARRY | Marital Status at Baseline |
| PXGENAPP | General Appearance Normal |
| PXHEADEY | Head, Eyes, Ears, Nose and Throat Normal |
| PXNECK | Neck Normal |
| PXCHEST | Chest Normal |
| PXHEART | Heart Normal |
| PXABDOM | Abdomen Normal |
| PXEXTREM | Extremities Normal |
| PXEDEMA | Edema Normal |
| PXPERIPH | Peripheral Vascular Normal |
| PXSKIN | Skin and Appendages Normal |
| PXMUSCUL | Musculoskeletal Normal |
| PXBACK | Back Normal |
| PXOTHER | Other Abnormality |
| AB42\_RAW | Raw AB42 biomarker levels |
| PHC\_AB42 | Harmonized biomarker AB42 Z-score (derived - see METHODS) |
| Tau\_RAW | Raw Tau biomarker levels |
| PHC\_Tau | Harmonized biomarker Tau Z-score (derived - see METHODS) |
| pTau\_RAW | Raw pTau biomarker levels |
| PHC\_pTau | Harmonized biomarker pTau Z-score (derived - see METHODS) |
| Mean | Mean amount of A-Beta Oligomer |
| SD | Standard deviation |
| CV | Coefficient of Variation |
| GENOTYPE | Apolipoprotien E (Apo-E) Genotype |
| MH16SMOK | Smoking |
| MH14ALCH | Alcohol Abuse |
| HMHYPERT | History of Hypertension |
| MH4CARD | Cardiovascular |

Visit Variables

|  |  |
| --- | --- |
| Variable | Nickname |
| DIAGNOSIS | Current Diagnosis |
| Q1SCORE | Word Recall |
| Q2SCORE | Commands |
| Q3SCORE | Construction |
| Q4SCORE | Delayed Word Recall |
| Q5SCORE | Naming |
| Q6SCORE | Ideational Praxis |
| Q7SCORE | Orientation |
| Q8SCORE | Word Recognition |
| Q9SCORE | Recall Instructions |
| Q10SCORE | Spoken Language |
| Q11SCORE | Word Finding |
| Q12SCORE | Comprehension |
| Q13SCORE | Number Cancellation |
| TOTAL13 | Total ADAS Score |
| N1 | Durably learned probability |
| N2 | Transiently learned probabiility |
| N3 | Durably learned probability following previous transient learning (N2) |
| N4 | Durably learned probability given successful (R1) from transiently learned |
| R1 | Probability of retrieving from transiently learned state |
| R2 | Probability of retrieving from durably learned state |
| R3 | Probability of retrieving from durably learned state after 5 minute delay |
| M1 | Probability of immediate recall of a non-durably stored episodic memory |
| M2 | Probability of immediate recall of a durably stored episodic memory |
| M3 | Probability of delayed recall of a durably stored episodic memory |
| AB40 | Abeta1-40 result in plasma |
| AB42 | Abeta1-42 result in plasma |
| ABETA | Normalized Amyloid Beta (1-42) in CSF |
| TAU | Normalized TAU in CSF |
| PTAU | Normalized PTAU (181) in CSF |
| BCDELIR | Delirium |
| NPID | Depression/Dysphoria |
| BCDEPRES | Clinically relevant depression based on clinical judgement or GDS? |
| NPIE | Anxiety |
| PTAU | PTAU result |
| TAU | TAU result |

Progression Variables

|  |  |
| --- | --- |
| Variable | Nickname |
| DIAGNOSIS | Current Diagnosis |
| Q1SCORE | Word Recall |
| Q2SCORE | Commands |
| Q3SCORE | Construction |
| Q4SCORE | Delayed Word Recall |
| Q5SCORE | Naming |
| Q6SCORE | Ideational Praxis |
| Q7SCORE | Orientation |
| Q8SCORE | Word Recognition |
| Q9SCORE | Recall Instructions |
| Q10SCORE | Spoken Language |
| Q11SCORE | Word Finding |
| Q12SCORE | Comprehension |
| Q13SCORE | Number Cancellation |
| TOTAL13 | Total ADAS Score |