**Supplemental Tables:**

**S1 Table – Predictors of 5 year outcomes in G1, 1Y, cost =1 (top 50 shown)**

|  |  |  |
| --- | --- | --- |
| **Rank** | **non-progressive (without MRI)** | **progressive (without MRI)** |
| **1** | **'EDSS\_0m** | **'EDSS\_diff\_12m-0m** |
| **2** | **'DISEASE\_ACTIVITY\_6m=1** | **'PYRAMIDAL\_FUNCTION\_12m** |
| **3** | **'EDSS\_6m** | **'BOWEL\_BLADDER\_FUNCTION\_12m** |
| **4** | **'DISEASE\_ACTIVITY\_0m=1** | **'EDSS\_diff\_6m-0m** |
| **5** | **'SENSORY\_FUNCTION\_0m** | **'SENSORY\_FUNCTION\_diff\_12m-0m** |
| **6** | **'SENSORY\_FUNCTION\_6m** | **'AI\_6m** |
| **7** | **'BOWEL\_BLADDER\_FUNCTION\_diff\_6m-0m** | **'PYRAMIDAL\_FUNCTION\_diff\_12m-0m** |
| **8** | **'DISEASE\_ACTIVITY\_12m=1** | **'AI\_12m** |
| **9** | **'BRAINSTEM\_FUNCTION\_6m** | **'AI\_0m** |
| **10** | **'VISUAL\_FUNCTION\_0m** | **'VISUAL\_FUNCTION\_diff\_12m-0m** |
| **11** | **'RACE=6** | **'BOWEL\_BLADDER\_FUNCTION\_0m** |
| **12** | **'DISEASE\_ACTIVITY\_12m=3** | **'DISEASE\_ACTIVITY\_0m=2** |
| **13** | **'BRAINSTEM\_FUNCTION\_0m** | **'MENTAL\_FUNCTION\_diff\_12m-0m** |
| **14** | **'FAMILY\_MS=3** | **'VISUAL\_FUNCTION\_diff\_6m-0m** |
| **15** | **'SENSORY\_FUNCTION\_12m** | **'EDSS\_12m** |
| **16** | **'RACE=3** | **'DISEASE\_ACTIVITY\_6m=6** |
| **17** | **'ETHNICITY=3** | **'BRAINSTEM\_FUNCTION\_diff\_12m-0m** |
| **18** | **'DISEASE\_STEP\_diff\_6m-0m** | **'CEREBELLAR\_FUNCTION\_diff\_6m-0m** |
| **19** | **'CEREBELLAR\_FUNCTION\_0m** | **'DISEASE\_STEP\_12m** |
| **20** | **'MENTAL\_FUNCTION\_6m** | **'MENTAL\_FUNCTION\_12m** |
| **21** | **'BRAINSTEM\_FUNCTION\_diff\_6m-0m** | **'DISEASE\_ACTIVITY\_0m=5** |
| **22** | **'DISEASE\_ACTIVITY\_0m=6**  | **'BOWEL\_BLADDER\_FUNCTION\_diff\_12m-0m** |
| **23** | **'MENTAL\_FUNCTION\_0m** | **'DISEASE\_ACTIVITY\_6m=3** |
| **24** | **'ETHNICITY=1** | **'FAMILY\_MS=2** |
| **25** | **'PYRAMIDAL\_FUNCTION\_diff\_6m-0m** | **'CEREBELLAR\_FUNCTION\_diff\_12m-0m** |
| **26** | **'FAMILY\_MS=1** | **'SENSORY\_FUNCTION\_diff\_6m-0m** |
| **27** | **'SMOKING\_EVER**  | **'DISEASE\_ACTIVITY\_6m=5** |
| **28** | **'DISEASE\_STEP\_6m** | **'DISEASE\_STEP\_diff\_12m-0m** |
| **29** | **'MENTAL\_FUNCTION\_diff\_6m-0m** | **'CEREBELLAR\_FUNCTION\_6m** |
| **30** | **'RACE=1** | **'DISEASE\_ACTIVITY\_12m=2** |
| **31** | **'DISEASE\_ACTIVITY\_12m** | **'VISUAL\_FUNCTION\_12m** |
| **32** | **'BOWEL\_BLADDER\_FUNCTION\_6m** | **'VISIT\_AGE'** |
| **33** | **'AI\_diff\_12m-0m** | **'BRAINSTEM\_FUNCTION\_12m** |
| **34** | **'DISEASE\_ACTIVITY\_0=7** | **'CEREBELLAR\_FUNCTION\_12m** |
| **35** | **'DISEASE\_ACTIVITY\_12m=6** | **'DISEASE\_ACTIVITY\_0m=3** |
| **36** | **'DISEASE\_STEP\_0m** | **'RACE=4** |
| **37** | **'AI\_6\_diff\_6m-0m** | **'ETHNICITY=2**  |
| **38** | **'DISEASE\_ACTIVITY\_6m=2** | **'DISEASE\_ACTIVITY\_12m=7** |
| **39** | **'DISEASE\_ACTIVITY\_12m=4** | **'SEX'** |
| **40** | **'DISEASE\_ACTIVITY\_6m=7** | **'PYRAMIDAL\_FUNCTION\_0m** |
| **41** | **'PYRAMIDAL\_FUNCTION\_6m** | **'VISUAL\_FUNCTION\_6m** |
| **42** | **'VISUAL\_FUNCTION\_6m** | **'AI\_diff\_6m-0m** |
| **43** | **'DISEASE\_ACTIVITY\_0m=3** | **'PYRAMIDAL\_FUNCTION\_6m** |
| **44** | **'SEX'** | **'RACE=2** |
| **45** | **'CEREBELLAR\_FUNCTION\_12m** | **'DISEASE\_ACTIVITY\_6m=4** |
| **46** | **'RACE=8** | **'AI\_diff\_12m-0m** |
| **47** | **'PYRAMIDAL\_FUNCTION\_0m** | **'DISEASE\_ACTIVITY\_12m=5** |
| **48** | **'BRAINSTEM\_FUNCTION\_12m** | **'DISEASE\_STEP\_0m** |
| **49** | **'RACE=7** | **'RACE=7** |
| **50** | **'CEREBELLAR\_FUNCTION\_6m** | **'BOWEL\_BLADDER\_FUNCTION\_6m** |

|  |  |  |
| --- | --- | --- |
| **Rank** | **non-progressive (with MRI)** | **progressive (with MRI)** |
| **1** | **'EDSS\_0m** | **'EDSS\_diff\_12m-0m** |
| **2** | **'EDSS\_6m** | **'EDSS\_diff\_6m-0m** |
| **3** | **'DISEASE\_ACTIVITY\_0m=1** | **'PYRAMIDAL\_FUNCTION\_12m** |
| **4** | **'DISEASE\_ACTIVITY\_6m=1** | **'PYRAMIDAL\_FUNCTION\_diff\_12m-0m** |
| **5** | **'RACE=6** | **'DISEASE\_ACTIVITY\_0m=2** |
| **6** | **'DISEASE\_ACTIVITY\_12m=3** | **'MENTAL\_FUNCTION\_diff\_12m-0m** |
| **7** | **'EDSS\_12m** | **'CEREBELLAR\_FUNCTION\_diff\_12m-0m** |
| **8** | **'BRAINSTEM\_FUNCTION\_6m** | **'AI\_6** |
| **9** | **'BPF\_12m** | **'MENTAL\_FUNCTION\_12m** |
| **10** | **'DISEASE\_ACTIVITY\_0m=6** | **'AI\_12m** |
| **11** | **'BRAINSTEM\_FUNCTION\_diff\_6m-0m** | **'DISEASE\_STEP\_6m'** |
| **12** | **'BOWEL\_BLADDER\_FUNCTION\_6m** | **'DISEASE\_ACTIVITY\_12m=5** |
| **13** | **'FAMILY\_MS=1** | **'SENSORY\_FUNCTION\_diff\_12m-0m** |
| **14** | **'BPF\_6m** | **'SENSORY\_FUNCTION\_diff\_6m-0m** |
| **15** | **'BRAINSTEM\_FUNCTION\_0m** | **'VISUAL\_FUNCTION\_diff\_12m-0m** |
| **16** | **'BOWEL\_BLADDER\_FUNCTION\_diff\_6m-0m** | **'CEREBELLAR\_FUNCTION\_12m** |
| **17** | **'ETHNICITY=3** | **'CEREBELLAR\_FUNCTION\_diff\_6m-0m** |
| **18** | **'CEREBELLAR\_FUNCTION\_0m'** | **'VISUAL\_FUNCTION\_diff\_6m-0m** |
| **19** | **'SENSORY\_FUNCTION\_0m'** | **'DISEASE\_ACTIVITY\_12m=7** |
| **20** | **'BPF\_0m'** | **'AI\_0m'** |
| **21** | **'BPF\_diff\_12m-0m**  | **'DISEASE\_STEP\_diff\_6m-0m** |
| **22** | **'BRAINSTEM\_FUNCTION\_12m** | **'DISEASE\_STEP\_12m'** |
| **23** | **'VISUAL\_FUNCTION\_0m** | **'RACE=7'** |
| **24** | **'BPF\_diff\_6m-0m** | **'VISUAL\_FUNCTION\_6m** |
| **25** | **'DISEASE\_ACTIVITY\_12m=1** | **'RACE=3'** |
| **26** | **'MENTAL\_FUNCTION\_0m** | **'VISUAL\_FUNCTION\_12** |
| **27** | **'BOWEL\_BLADDER\_FUNCTION\_0m** | **'AI\_diff\_6m-0m** |
| **28** | **'ETHNICITY=2** | **'ETHNICITY=1'** |
| **29** | **'PYRAMIDAL\_FUNCTION\_diff\_6m-0m** | **'LESION\_VOLUME\_12m** |
| **30** | **'PYRAMIDAL\_FUNCTION\_6m** | **'DISEASE\_ACTIVITY\_6m=6** |
| **31** | **'DISEASE\_ACTIVITY\_12m=6** | **'FAMILY\_MS=2** |
| **32** | **'SMOKING\_EVER'** | **'DISEASE\_ACTIVITY\_6m=2** |
| **33** | **'MENTAL\_FUNCTION\_6m** | **'DISEASE\_ACTIVITY\_0m=7** |
| **34** | **'FAMILY\_MS=3** | **'SEX'** |
| **35** | **'PYRAMIDAL\_FUNCTION\_0m** | **'DISEASE\_STEP\_diff\_12m-0m** |
| **36** | **'DISEASE\_ACTIVITY\_6m=5** | **'CEREBELLAR\_FUNCTION\_6m** |
| **37** | **'BOWEL\_BLADDER\_FUNCTION\_12m** | **'LESION\_VOLUME\_6m** |
| **38** | **'DISEASE\_ACTIVITY\_0m=3** | **'VISIT\_AGE'** |
| **39** | **'DISEASE\_ACTIVITY\_6m=3** | **'SENSORY\_FUNCTION\_12m** |
| **40** | **'DISEASE\_ACTIVITY\_0m=5** | **'MENTAL\_FUNCTION\_diff\_6m-0m** |
| **41** | **'RACE=5** | **'LESION\_VOLUME\_diff\_12m-0m** |
| **42** | **'BRAINSTEM\_FUNCTION\_diff\_12m-0m** | **'SENSORY\_FUNCTION\_6m** |
| **43** | **'BOWEL\_BLADDER\_FUNCTION\_diff\_12m-0m** | **'BOWEL\_BLADDER\_FUNCTION\_diff\_12m-0m** |
| **44** | **'DISEASE\_STEP\_0m** | **'DISEASE\_STEP\_0m** |
| **45** | **'AI\_diff\_12m-0m** | **'AI\_diff\_12m-0m** |
| **46** | **'SENSORY\_FUNCTION\_6m** | **'PYRAMIDAL\_FUNCTION\_0m** |
| **47** | **'DISEASE\_ACTIVITY\_12m=2** | **'DISEASE\_ACTIVITY\_0m=4** |
| **48** | **'MENTAL\_FUNCTION\_diff\_6m-0m** | **'DISEASE\_ACTIVITY\_6m=7** |
| **49** | **'SENSORY\_FUNCTION\_12m** | **'LESION\_VOLUME\_diff\_6m-0m** |
| **50** | **'LESION\_VOLUME\_0m** | **'DISEASE\_ACTIVITY\_0m=3** |

Abbreviations:

AI – Ambulation index

BPF – brain parenchymal fraction

EDSS – Expanded disability status scale

Disease activity categories:

1 stable

2 active - current attack

3 active - attack in past 6 months

4 active - progressive

5 improved

6 active - MRI activity only

7 active - MRI plus attack-progression

Race:

1 American Indian or Alaska Native

2 Asian

3 Black or African American

5 More than one race

6 Native Hawaiian or Other Pacific Islander

7 White

8 Unknown or not reported

Ethnicity:

1 Hispanic or latino

2 Not hispanic or latino

3 Unknown

\*Red highlighted variables show key MRI features