Appendix

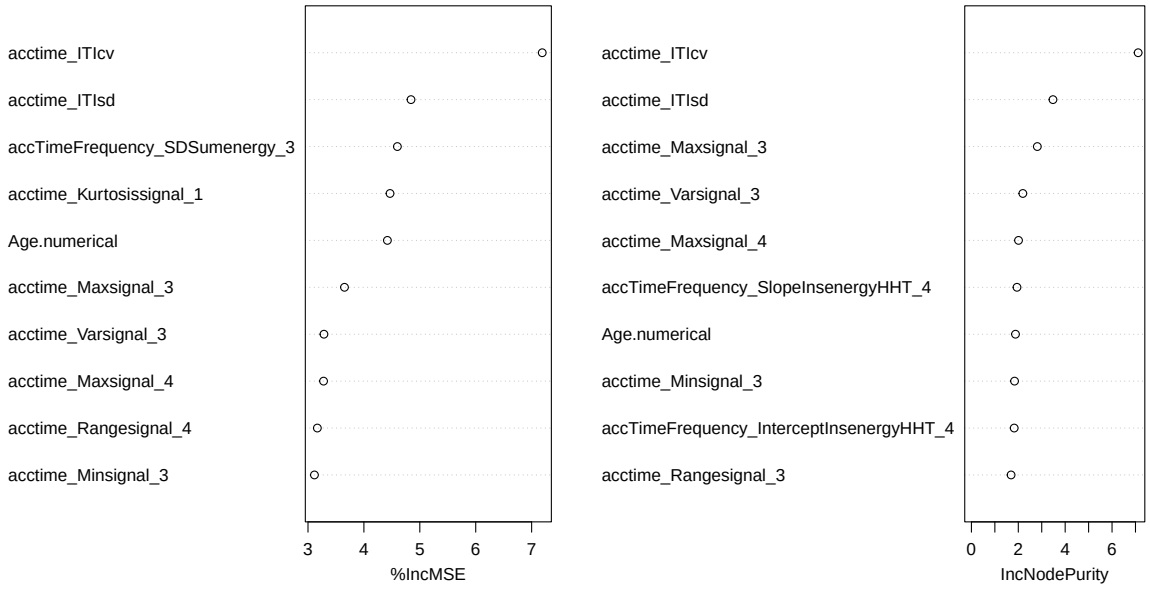

Figure 1: Top 10 Influential Variables in Dominant Gait Time Prediction Using Random Forest

Table 1: Dominant Foot Gait Time Model Summaries

Model	Number of Features Selected	$R^2_{\text{Train,Adj}}$	$\text{RMSE}_{\text{Train}}$	$\text{RMSE}_{\text{Test}}$
Lasso	5	0.446	0.802	0.882
Lasso Fitted	5	0.492	0.735	0.980
Ridge	136	0.366	0.858	**0.792**
Elastic Net, $\alpha = 0.3$	11	0.421	0.820	0.855
Forward Selection	8	0.618	0.619	1.269
Mixed Stepwise	8	0.618	0.619	1.269
Random Forest	136	0.206	0.960	0.967
Bagging	136	0.199	0.964	0.969
Boosting	136	0.636	0.650	0.818
Support Vector Machine	136	0.99	0.107	0.841
PCR	136	0.222	0.848	0.842
PLSR	136	–	0.429	1.230

Table 2: Dominant Foot TUG Time Model Summaries

Model	Number of Features Selected	$R^2_{\text{Train,Adj}}$	$\text{RMSE}_{\text{Train}}$	$\text{RMSE}_{\text{Test}}$
Lasso	19	0.622	2.536	3.151
Lasso Fitted	19	0.597	2.157	4.215
Ridge	136	0.504	2.904	3.242
Elastic Net, $\alpha = 0.1$	39	0.61	2.575	3.142
Forward Selection	12	0.658	2.154	4.459
Mixed Stepwise	11	0.656	2.183	4.395
Random Forest	136	0.163	3.774	**2.729**
Bagging	136	0.153	3.796	2.793
Boosting	136	0.786	1.909	3.064
Support Vector Machine	136	0.348	3.331	3.382
PCR	136	0.386	2.885	4.044
PLSR	136	–	1.664	4.294

Table 3: Non-zero Lasso Coefficients for Dominant Gait Time Model

Variable	Coefficient
acctime_ITIsd	5.42730
Age.numerical	0.00714
acctime_Powerlog_3	-0.00001
gyrotimefrequency_maxdominantfrequency	-0.04005
accTimeFrequency_SDSumenergy_3	-0.88022

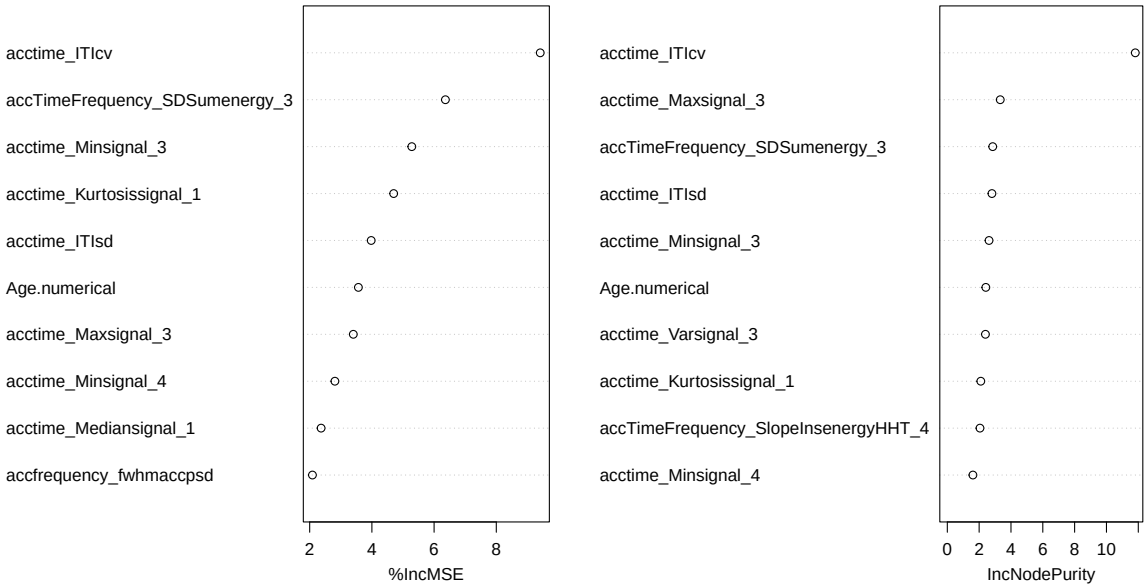

Figure 2: Top 10 Influential Variables in Dominant Gait Time Prediction Using Bagging

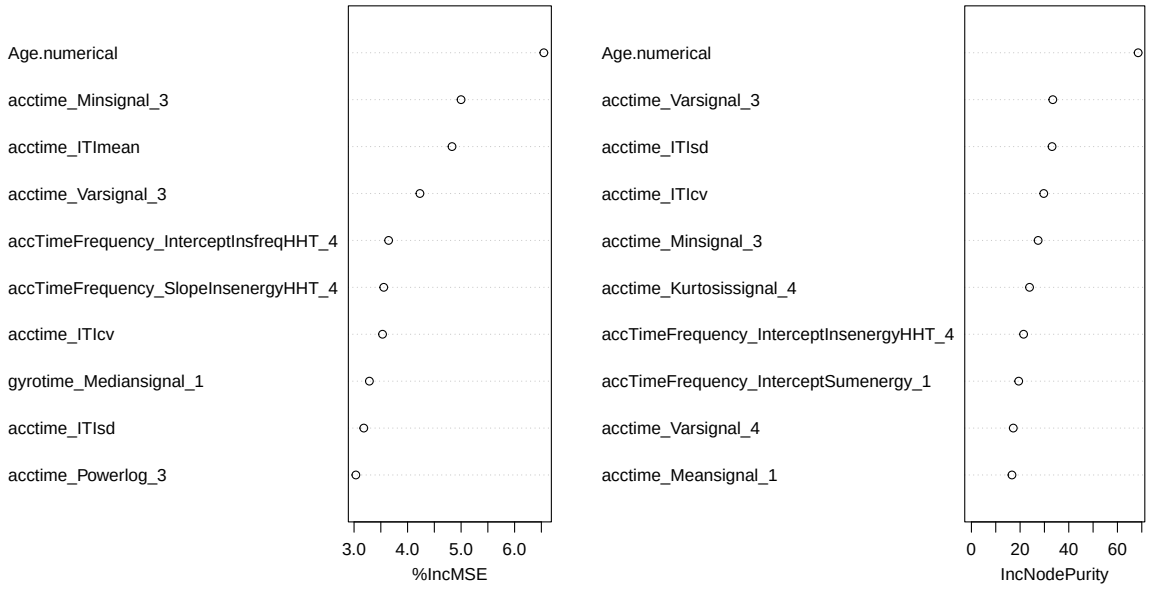

Figure 3: Top 10 Influential Variables in Dominant TUG Time Prediction Using Random Forest

Table 4: Summary of the Nondominant Principle Component Regression for Gait Time

Term	Estimate	Std. Error	t value	p value
(Intercept)	3.78737	0.11525	32.86319	0.00000
PC1	-0.06675	0.01841	-3.62544	0.00074
PC2	-0.04503	0.02506	-1.79699	0.07920
PC3	-0.04958	0.03474	-1.42710	0.16061
PC4	0.08972	0.04432	2.02445	0.04902
PC5	-0.05509	0.04803	-1.14679	0.25766
PC6	0.01101	0.05010	0.21982	0.82703
PC7	0.05982	0.05415	1.10464	0.27532
PC8	0.09473	0.05743	1.64963	0.10614
PC9	0.06676	0.06580	1.01453	0.31587
PC10	0.08367	0.06782	1.23363	0.22389
PC11	0.07909	0.06939	1.13978	0.26054
PC12	0.07933	0.07454	1.06432	0.29299

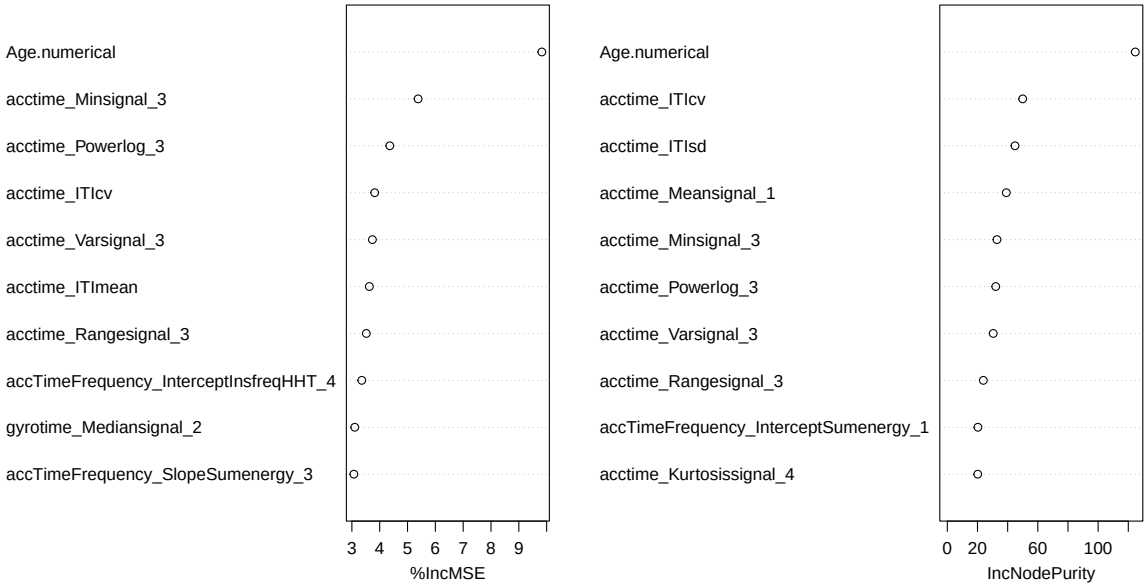

Figure 4: Top 10 Influential Variables in Dominant TUG Time Prediction Using Bagging

Table 5: Summary of the Nondominant Principle Component Regression for TUG Time

Term	Estimate	Std. Error	t value	p value
(Intercept)	11.92596	0.42081	28.34025	0.00000
PC1	-0.27146	0.06547	-4.14605	0.00014
PC2	0.06805	0.09121	0.74603	0.45937
PC3	0.31619	0.13524	2.33799	0.02370
PC4	-0.53244	0.16920	-3.14676	0.00286
PC5	-0.46944	0.17895	-2.62336	0.01170
PC6	-0.30103	0.19937	-1.50993	0.13776
PC7	0.19677	0.20918	0.94067	0.35168
PC8	-0.02604	0.22435	-0.11606	0.90810
PC9	0.00580	0.22953	0.02529	0.97993
PC10	-0.24811	0.23103	-1.07394	0.28833
PC11	-0.45367	0.24742	-1.83364	0.07304
PC12	-0.32036	0.27173	-1.17896	0.24435

Table 6: Non-zero Lasso Coefficients for Nondominant Gait Time Model

Variable	Coefficient
acctime_ITIsd	2.63125
Age.numerical	0.00267
acctime_Powerlog_3	-0.00002
accTimeFrequency_MeanSumenergy_3	-0.61072
accTimeFrequency_SDSumenergy_2	-0.70456

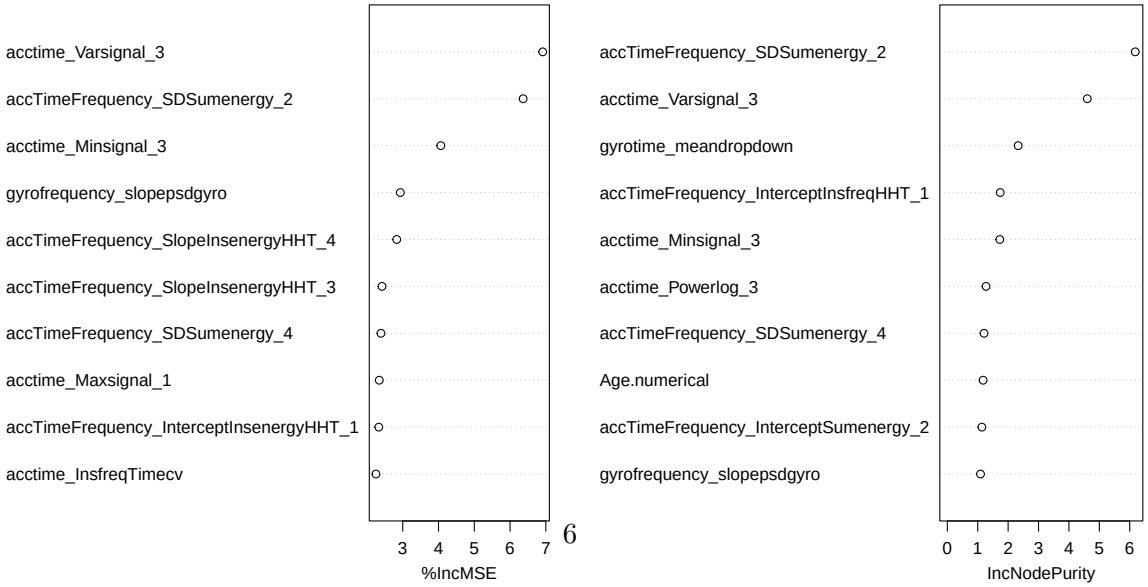

Figure 5: Top 10 Influential Variables in Nondominant Gait Time Prediction Using Bagging

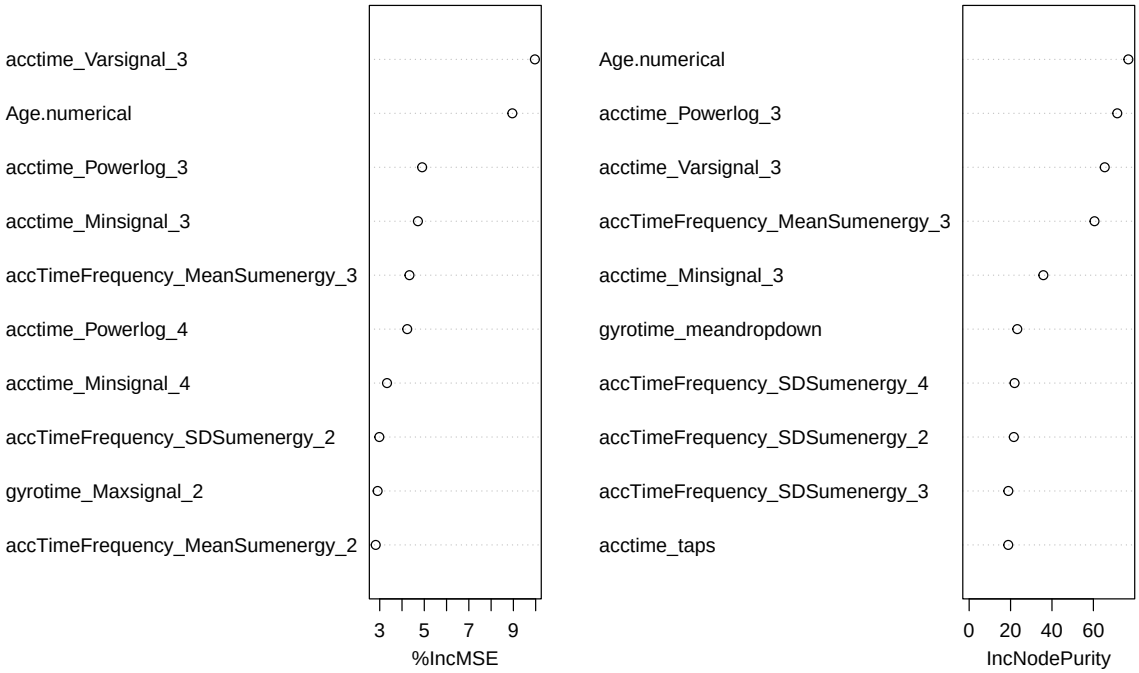

Figure 6: Top 10 Influential Variables in Nondominant TUG Time Prediction Using Bagging

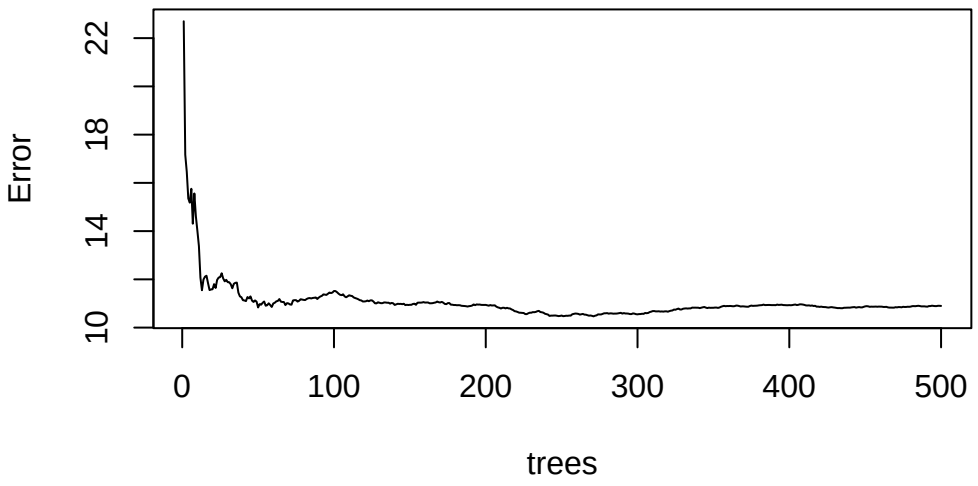

Figure 7: Out-of-bag error plot for the Nondominant TUG Time bagging model, showing stabilization of the error estimate with 500 trees.

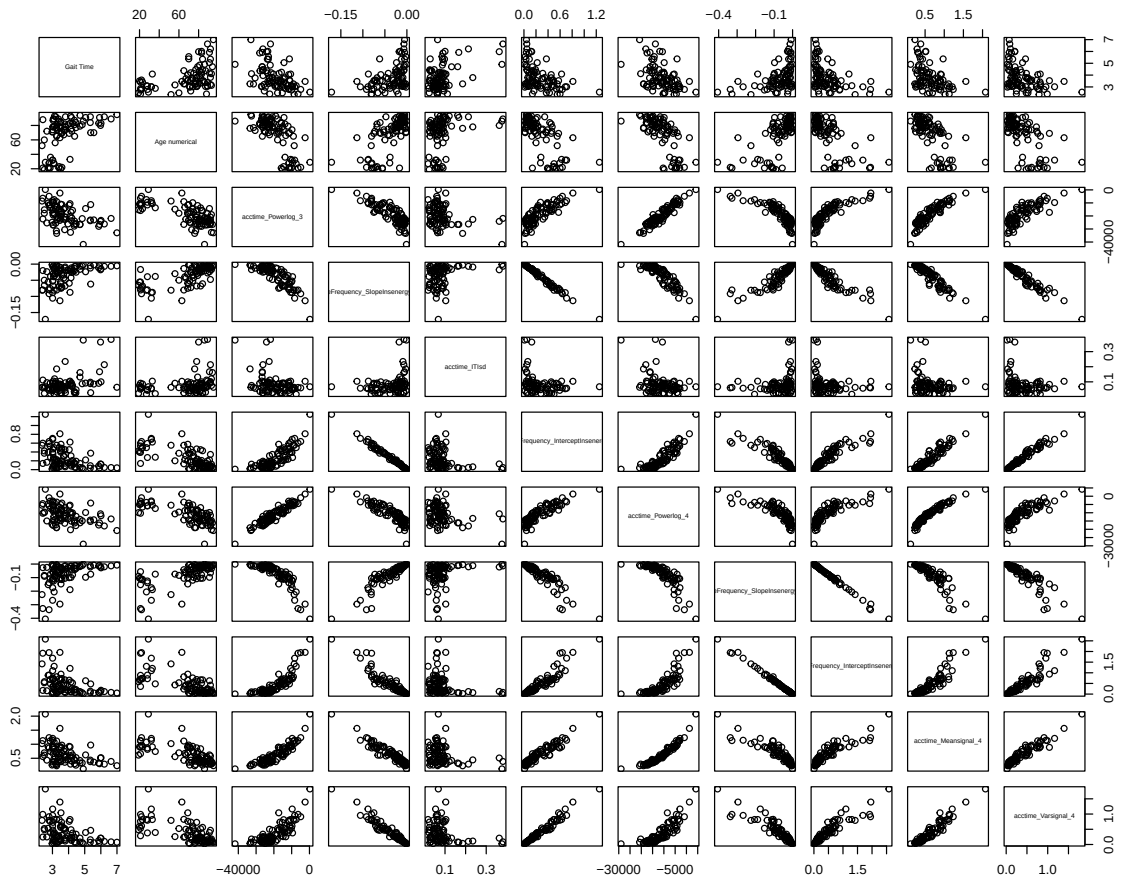

Figure 8: Pairwise Plot of Top 10 Correlated Dominant Foot Predictors with Gait Time

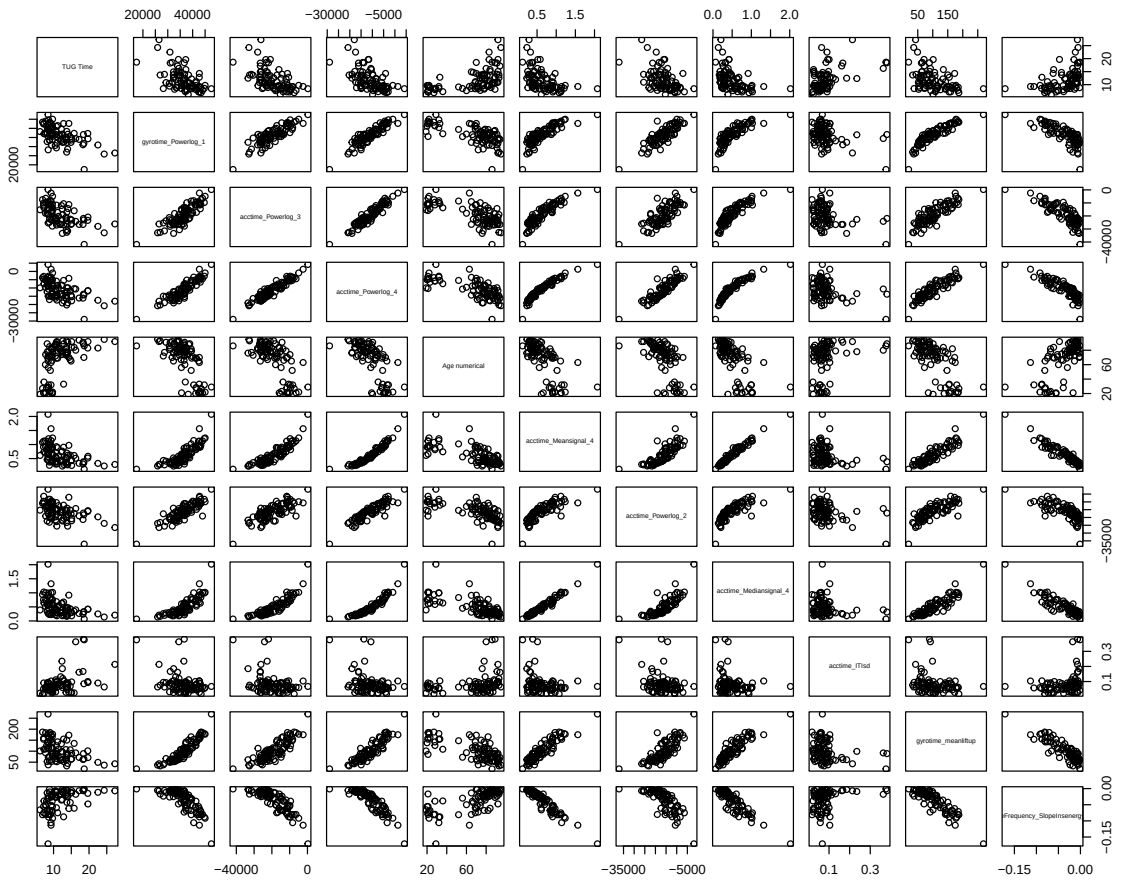

Figure 9: Pairwise Plot of Top 10 Correlated Dominant Foot Predictors with TUG Time

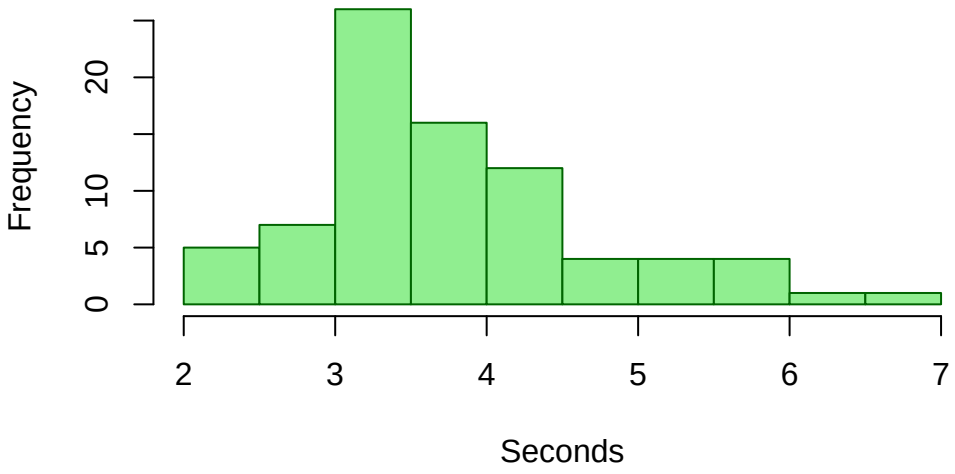

Figure 10: Histogram of Gait Time Distribution

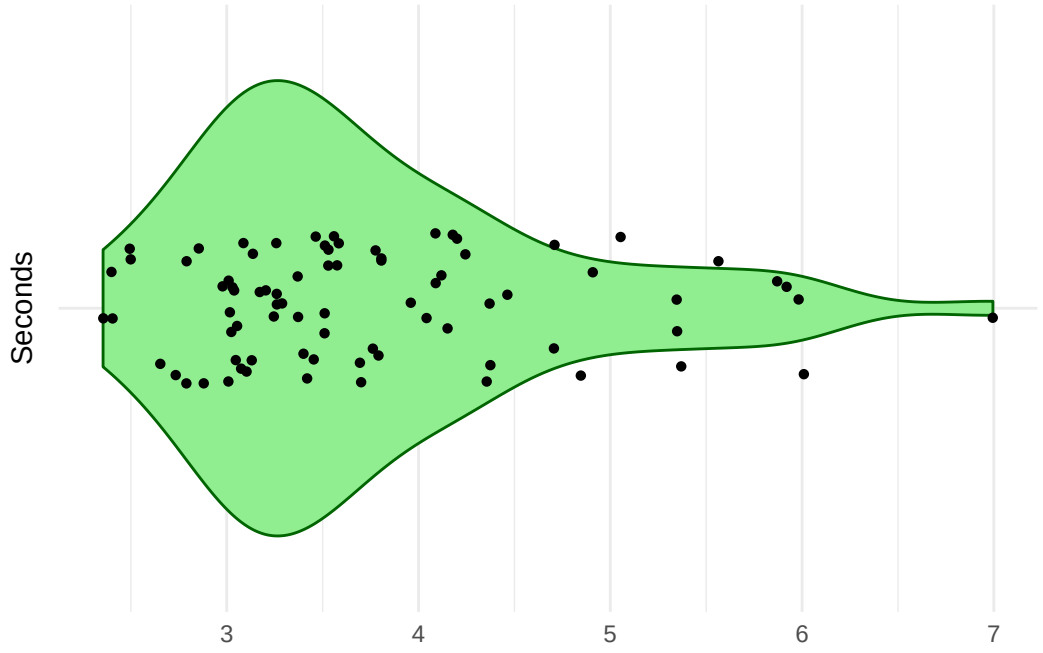

Figure 11: Violin Plot of Gait Time Distribution

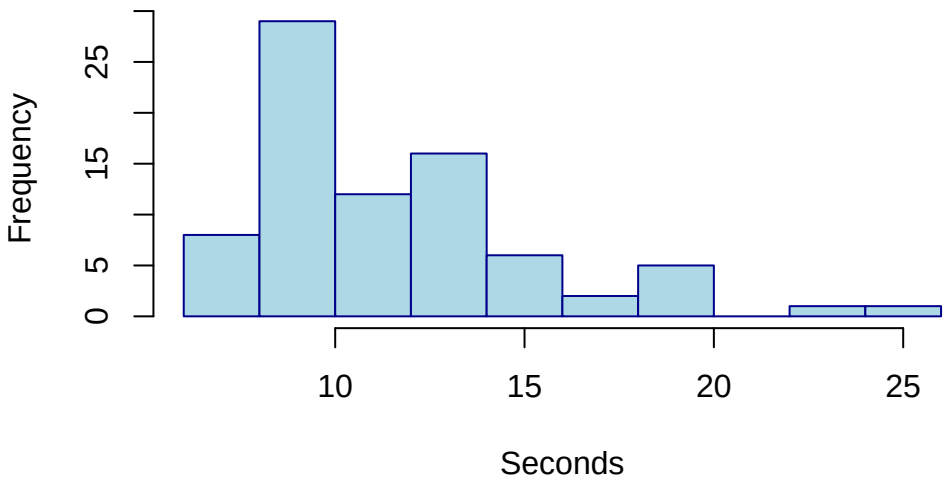

Figure 12: Histogram of TUG Time Distribution

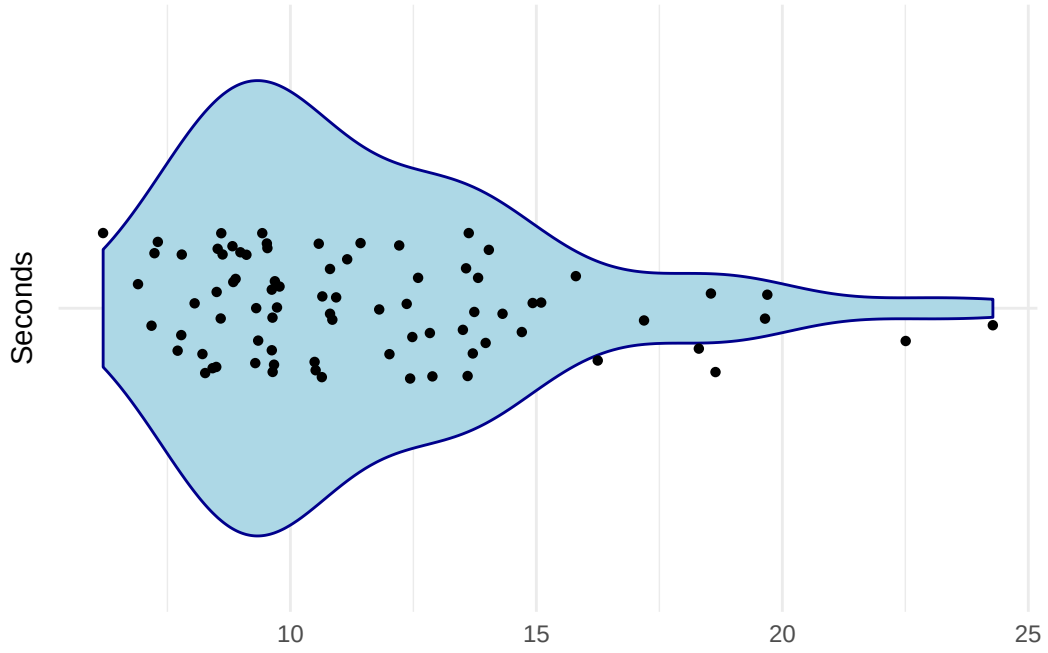

Figure 13: Violin Plot of TUG Time Distribution

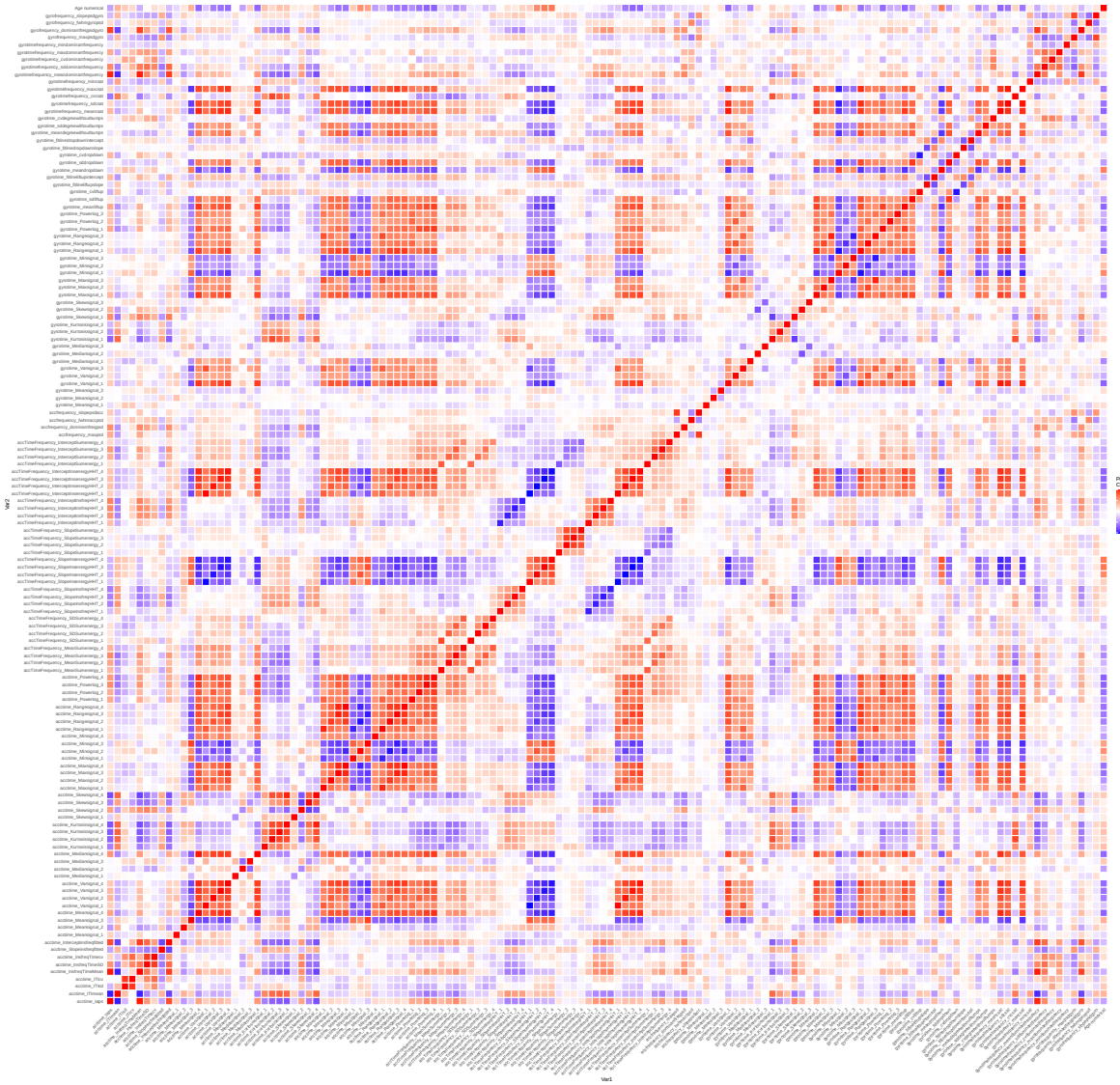

Figure 14: Heatmap of Dominant Foot Features