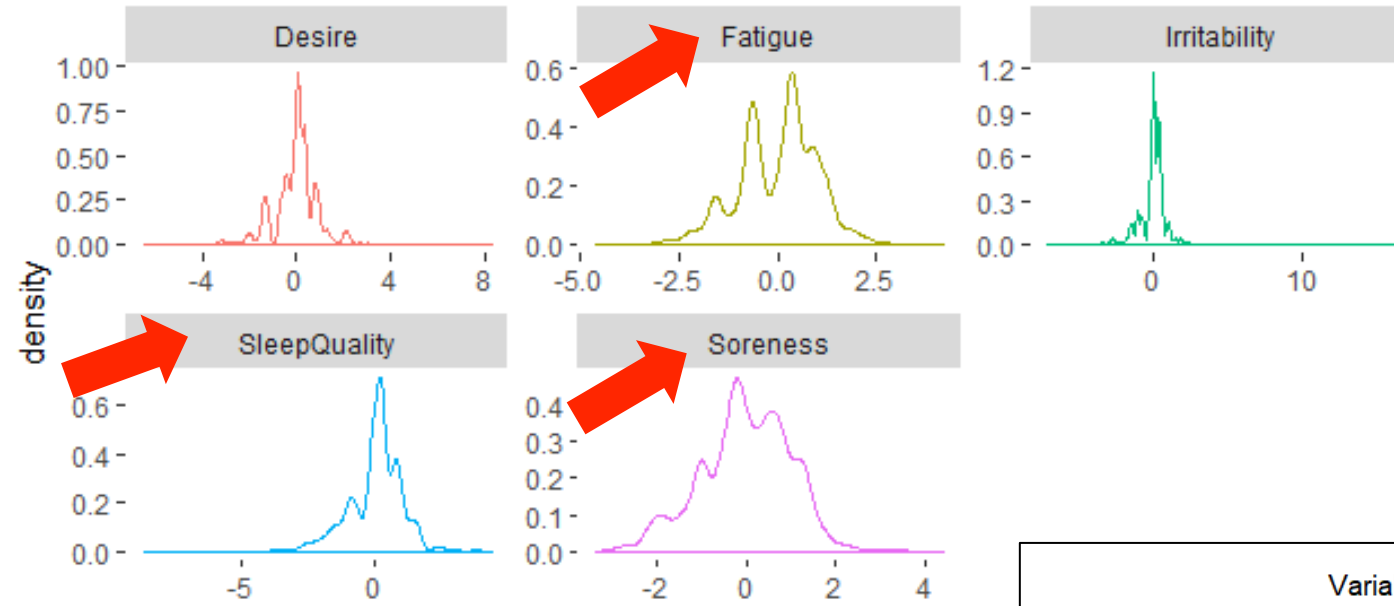# What do Weekly Training Load and Weather Conditions Have in Common?

Insights for a Better Measure of Fatigue and its Impact on Athlete Performance
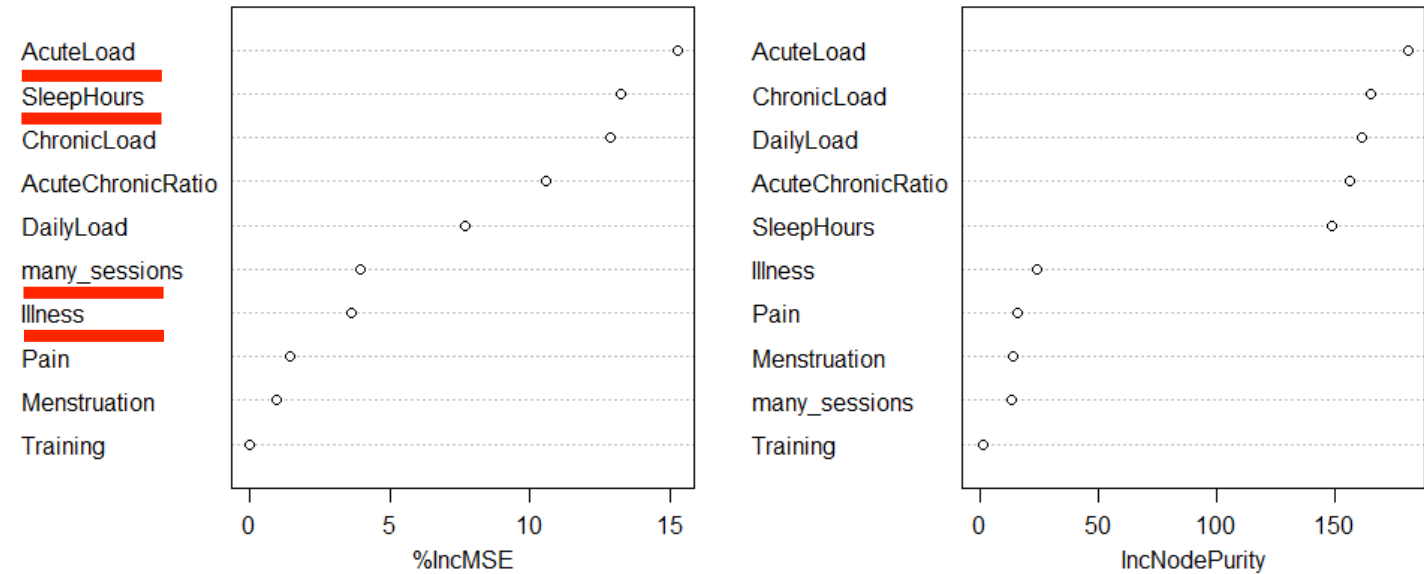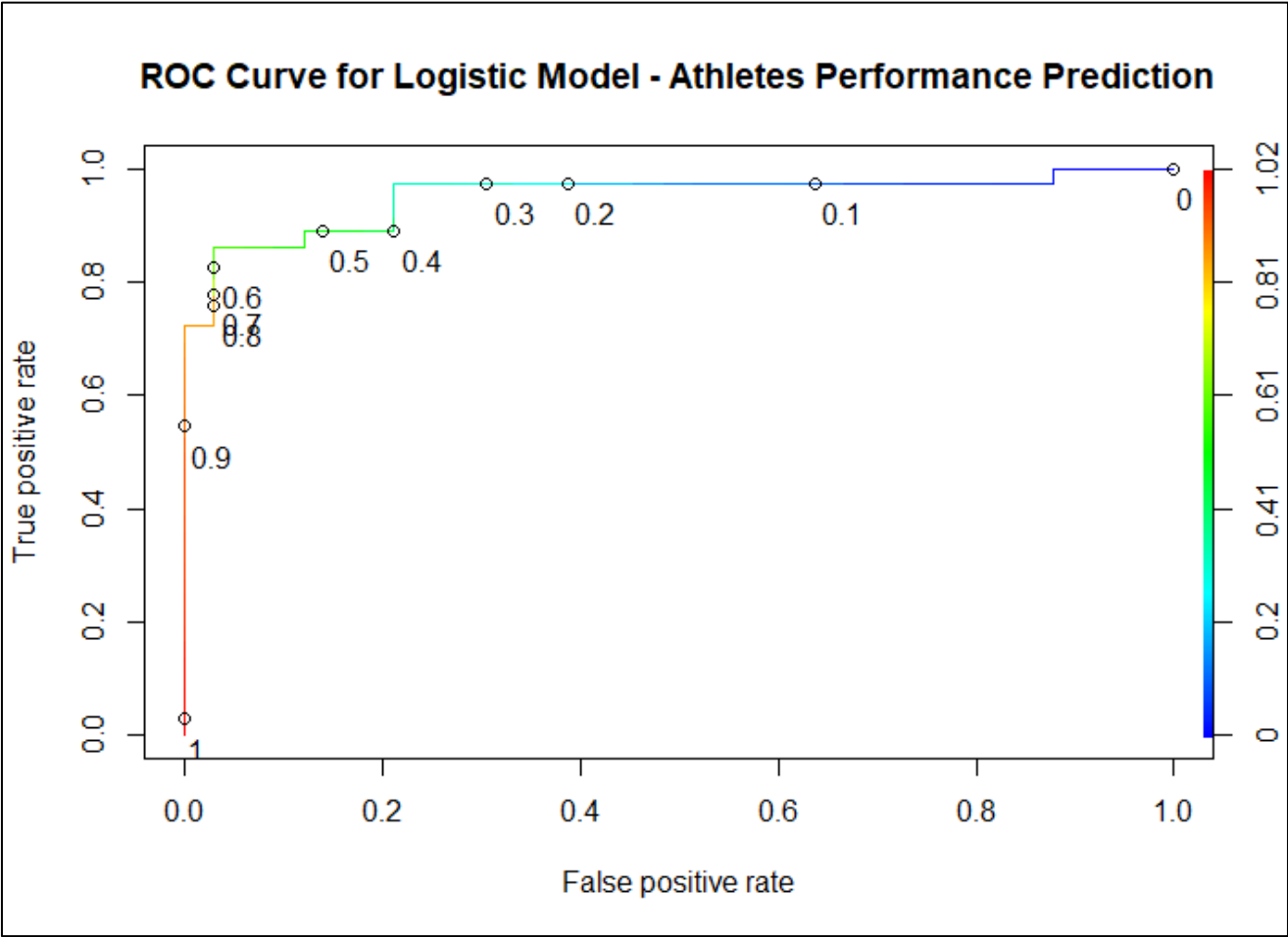
Standardized density plots for monitoring score variables

Variable Importance in Random Forest Model to determine Fatigue

Hertie School of Governance

Assessing the impact of Fatigue on athlete performance controlling for weather conditions

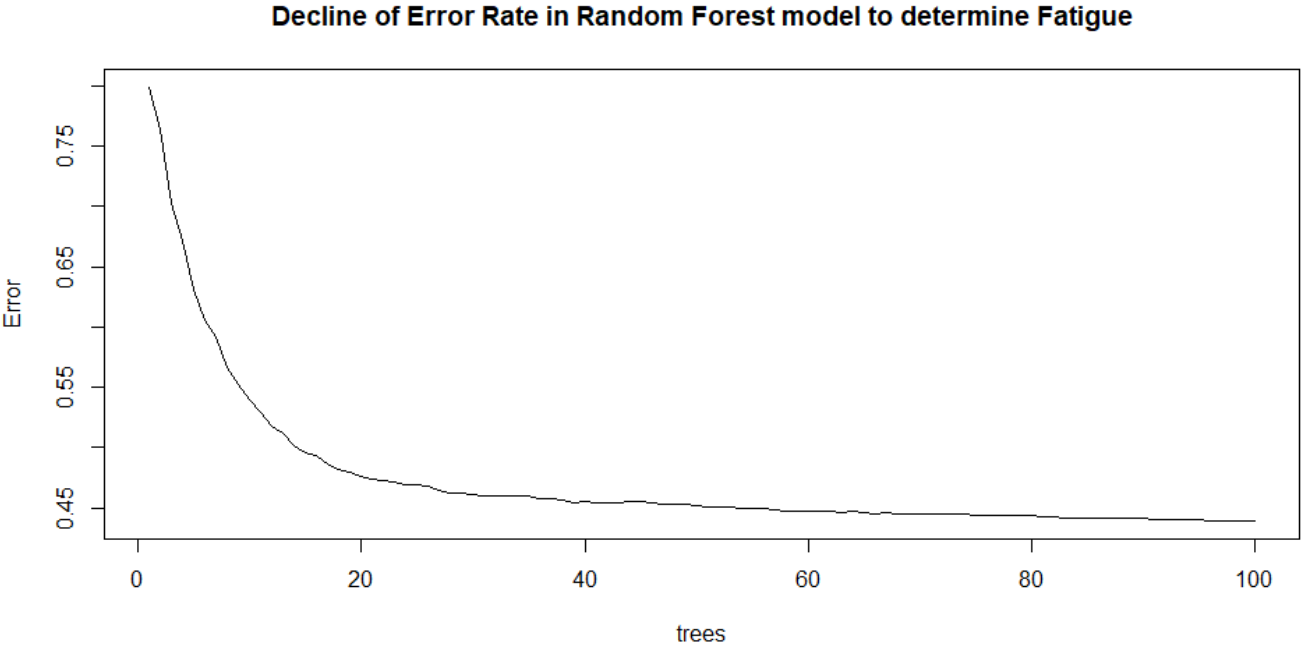ROC Curve for Logistic Model - Athletes Performance Prediction

Accuracy: 91.3 % of correctly predicting athlete performance
AUC: 0.95

Athlete performance was measured with a Performance Index combining self-reported perception of performance and the actual outcome of games
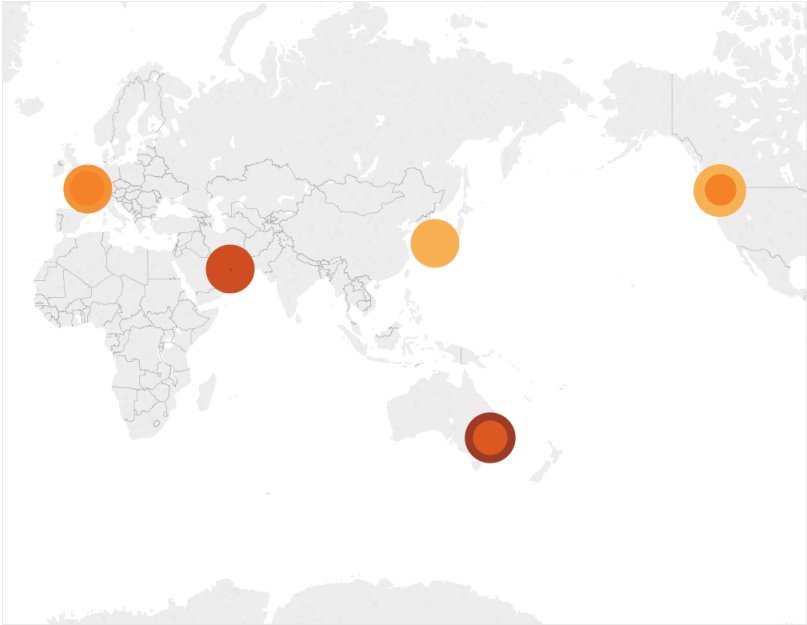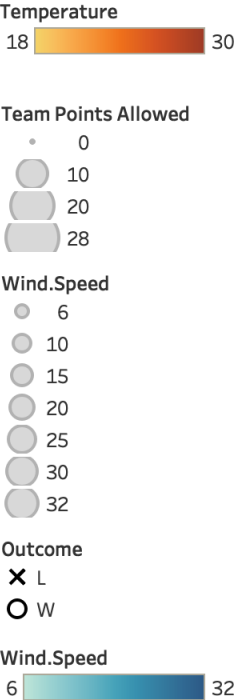
Appendix

Decline of Error Rate in Random Forest model to determine Fatigue

	Dependent variable:
	performance
many_sessions1	-0.718
	(1.171)
AcuteLoad	1.329**
	(0.620)
SleepHours	-0.330
	(0.313)
Humidity	0.032
	(0.058)
Sea.Level	-0.018
	(0.039)
IllnessSlightly Off	-13.740
	(3,500.814)
Team.Rating	0.376
	(0.331)
Weather.ConditionsPartly Sunny	2.200
	(1.527)
Weather.ConditionsPassing Clouds	1.898
	(1.715)
Weather.ConditionsShowers	5.664*
	(3.148)
Weather.ConditionsSunny	3.572*
	(1.919)
Weather.ConditionsWarm	-14.578
	(2,170.512)
Temperature	0.548
	(0.506)
Wind.Speed	-0.248
	(0.299)
Constant	-13.381
	(9.932)
Observations	81
Log Likelihood	-31.014
Akaike Inf. Crit.	92.028
Note:	*p<0.1; **p<0.05; ***p<0.01

Team Points Allowed

Wind Speed

Humidity

Sea Level

Temperature
18 ▬▬▬ 30

Team Points Allowed
- 0
- 10
- 20
- 28

Wind.Speed
- 6
- 10
- 15
- 20
- 25
- 30
- 32

Outcome
✕ L
◯ W

Wind.Speed
6 ▬▬▬ 32

Humidity
57 ▬▬▬ 84

Sea.Level
2 ▬▬▬ 91

Temperature

Map based on Longitude (generated) and Latitude (generated). Color shows Temperature as an attribute. Size shows distinct count of Game ID. Shape shows details about Outcome. The marks are labeled by Tournament.x. The view is filtered on Longitude (generated), which keeps non-Null values only.