



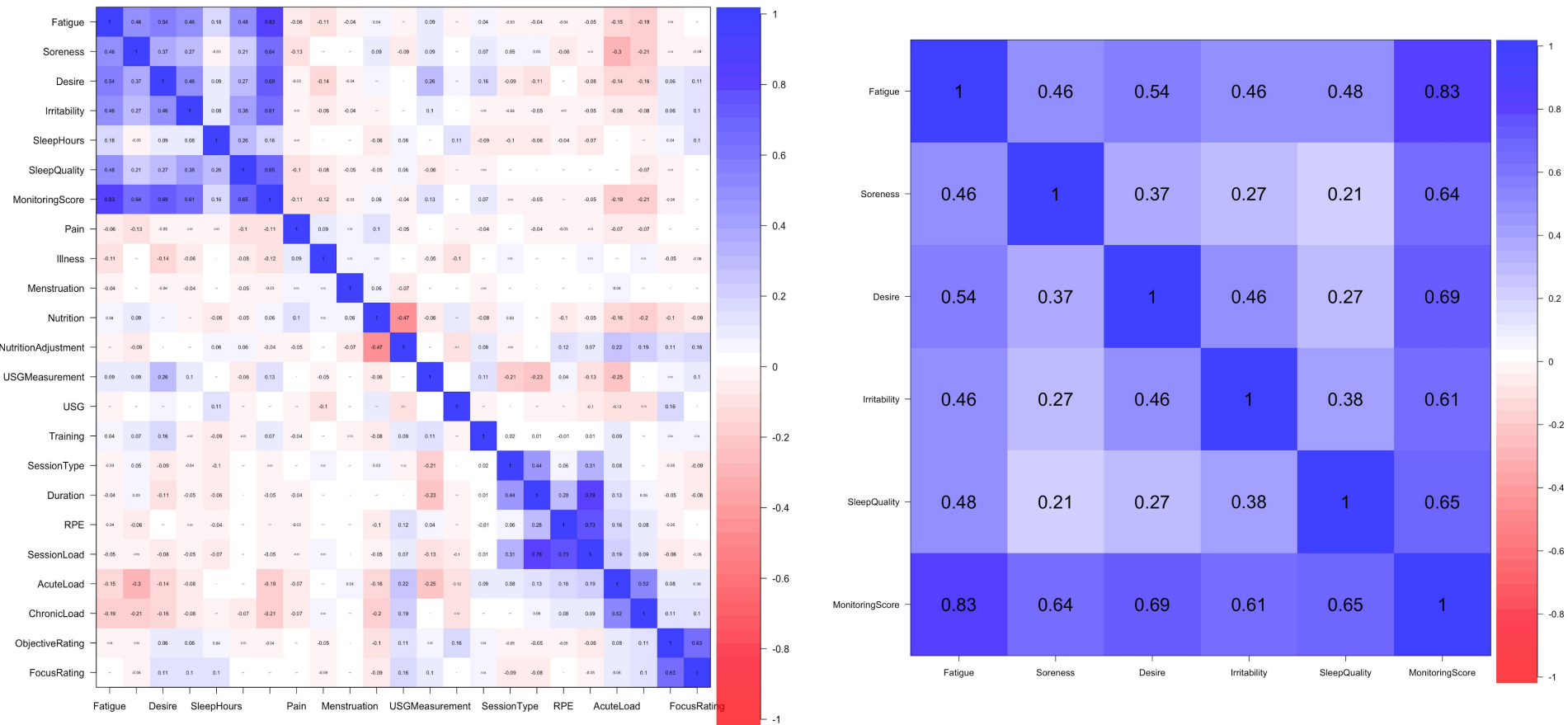
# Data Fest 2019

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# Objectives

- Currently, training load is measured through combinations of subjective and objective measurements.
- We looked at these subjective measurements more in-depth.
  - Sport is as much psychological as physical
- Fatigue plays a critical role in a player's performance but how do we define it?

# Correlation Matrix



# 10-Fold Cross Validation

## Naive Bayesian Algorithm

```
6345 samples
 5 predictor
 3 classes: 'Disagree', 'Average', 'Fresher than usual'

No pre-processing
Resampling: Cross-Validated (10 fold)
Summary of sample sizes: 5711, 5710, 5711, 5709, 5711, 5711, ...
Resampling results:

Accuracy   Kappa
0.7380657  0.5446714

Tuning parameter 'fL' was held constant at a value of 0
Tuning parameter 'usekernel' was held constant
at a value of FALSE
Tuning parameter 'adjust' was held constant at a value of 1
```

Naive Bayes tries to classify instances based on the probabilities of previously seen attributes/instances

## Confusion Matrix and Statistics

prediction_training_sample	Disagree	Average	Fresher than usual
Disagree	2430	333	11
Average	993	1904	138
Fresher than usual	39	144	353

### Overall Statistics

Accuracy : 0.7387  
95% CI : (0.7277, 0.7495)  
No Information Rate : 0.5456  
P-Value [Acc > NIR] : < 2.2e-16

Kappa : 0.5458  
McNemar's Test P-Value : < 2.2e-16

### Statistics by Class:

	Class: Disagree	Class: Average	Class: Fresher than usual
Sensitivity	0.7019	0.7997	0.70319
Specificity	0.8807	0.7147	0.96868
Pos Pred Value	0.8760	0.6273	0.65858
Neg Pred Value	0.7110	0.8559	0.97435
Prevalence	0.5456	0.3753	0.07912
Detection Rate	0.3830	0.3001	0.05563
Detection Prevalence	0.4372	0.4783	0.08448
Balanced Accuracy	0.7913	0.7572	0.83593

# Conclusion

- Our Model does a good job of predicting fatigue.
- Moving forward, we could perform some more exploratory and regression analyses to further study fatigue levels.
- For now, it would be advisable to implement methods that decrease fatigue, focusing on these model parameters, to improve the player's overall health and increase performance in games.
- Also we would need consistent data collection for other omitted variables to improve analyses.