



## Group 9: Shelter Animal Outcomes

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### Challenge

Prediction of the outcome for each animal after they leave Austin Animal Center

### Dataset

Consideration of information such as breed, color, sex and age of the animals



### Data Understanding & Preparation



1

#### Correct syntactic & semantic errors

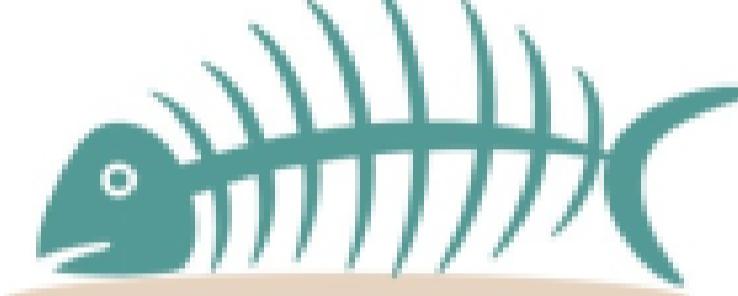
Node: String manipulation  
E.g. Attribute Name  
"3Buster" → "Buster"  
"7" → "Unknown"



2

#### Attribute transformation

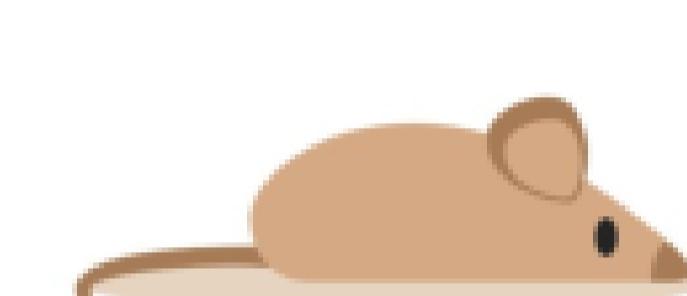
Node: Rule Engine, String manipulation, Cell Splitter, Math Formulas  
Eg: Sexuponoutcome → Intactness, Gender  
Datetime → Weekday & Daytime  
Ageuponoutcome → Lifestage (adult or baby)



3

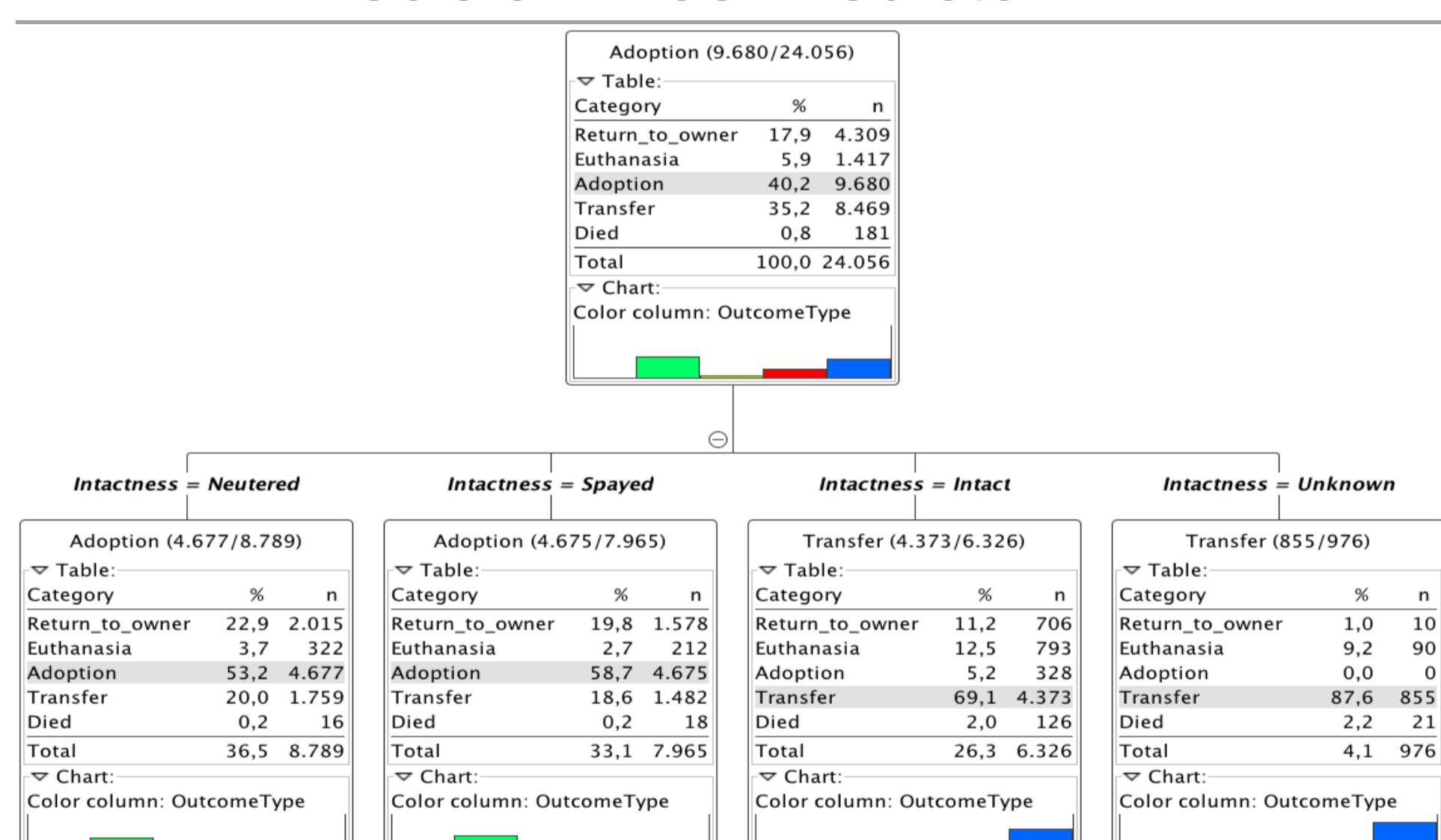
#### Handling missing values

Node: Missing value  
Eg: Name → replace with "Unknown"  
Sexuponoutcome → replace with most frequent value  
Age in days → replace with mean value

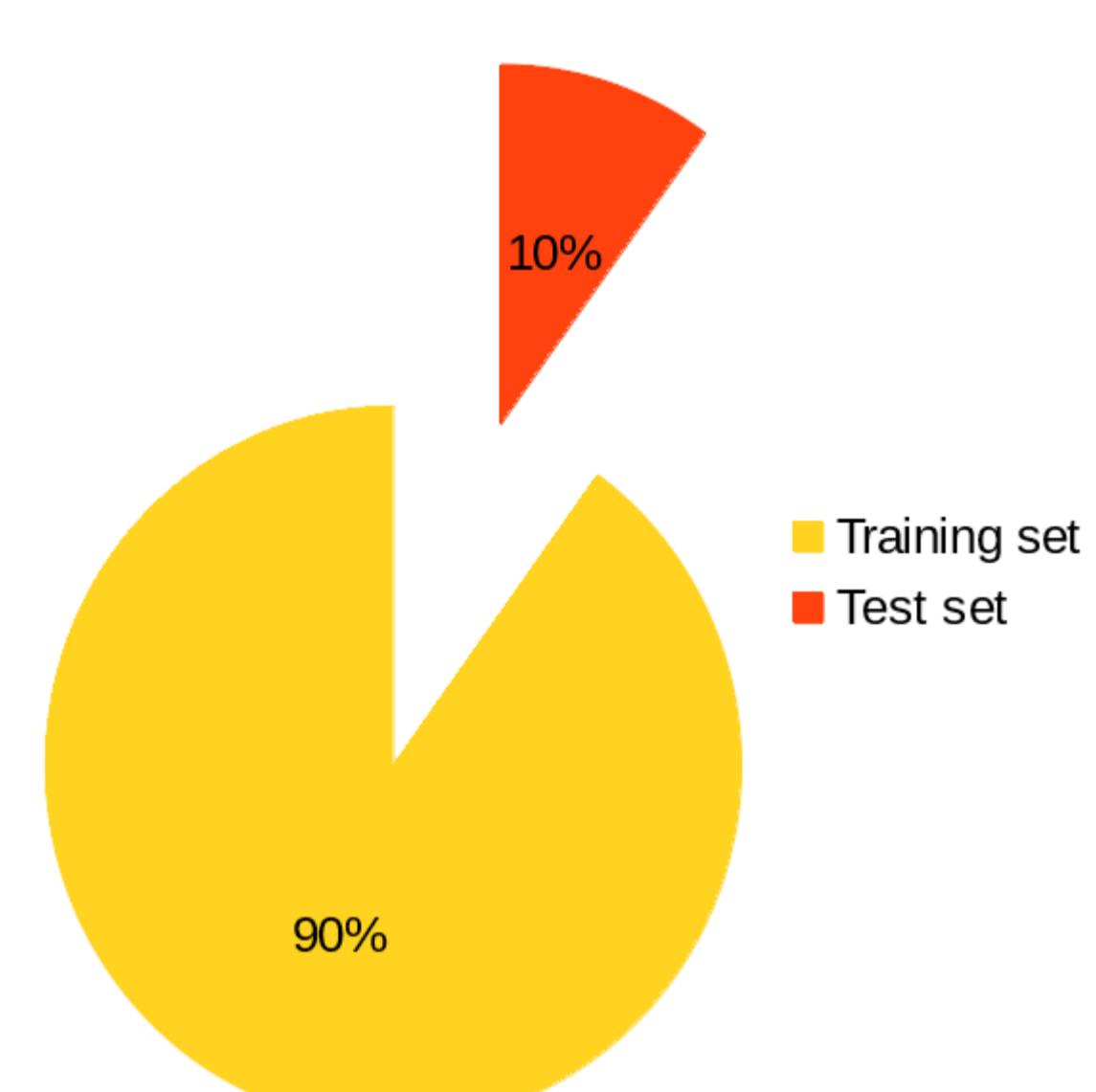


### Modelling

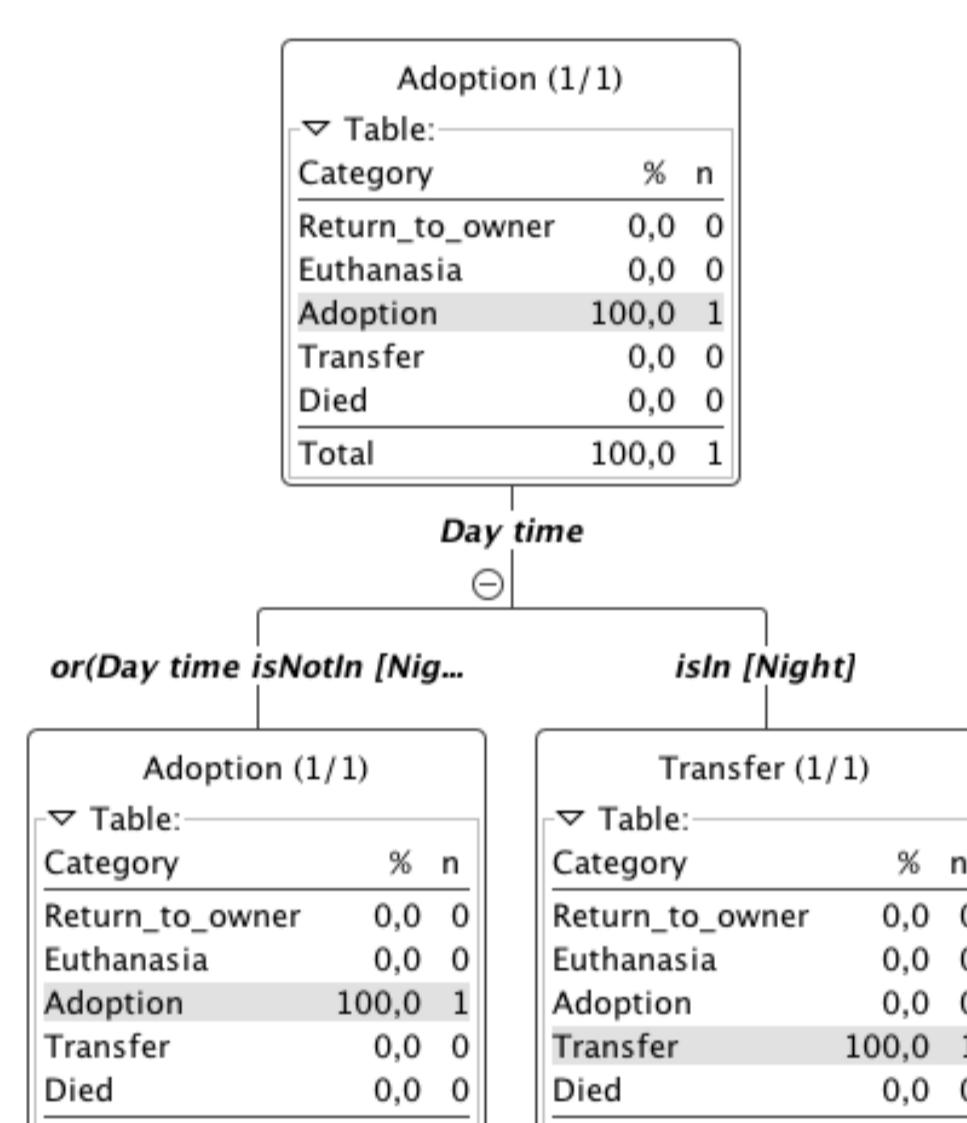
#### Decision Tree Predictor



#### Partitioning



#### Random Forest Learner



### Results

Confusion Matrix Decision Tree					
Outcome type (Prediction)	Return to Owner	Euthanasia	Adoption	Transfer	Died
Return to owner	175	4	235	63	0
Euthanasia	33	4	18	83	0
Adoption	95	2	917	75	0
Transfer	83	10	196	664	0
Died	2	0	1	13	0

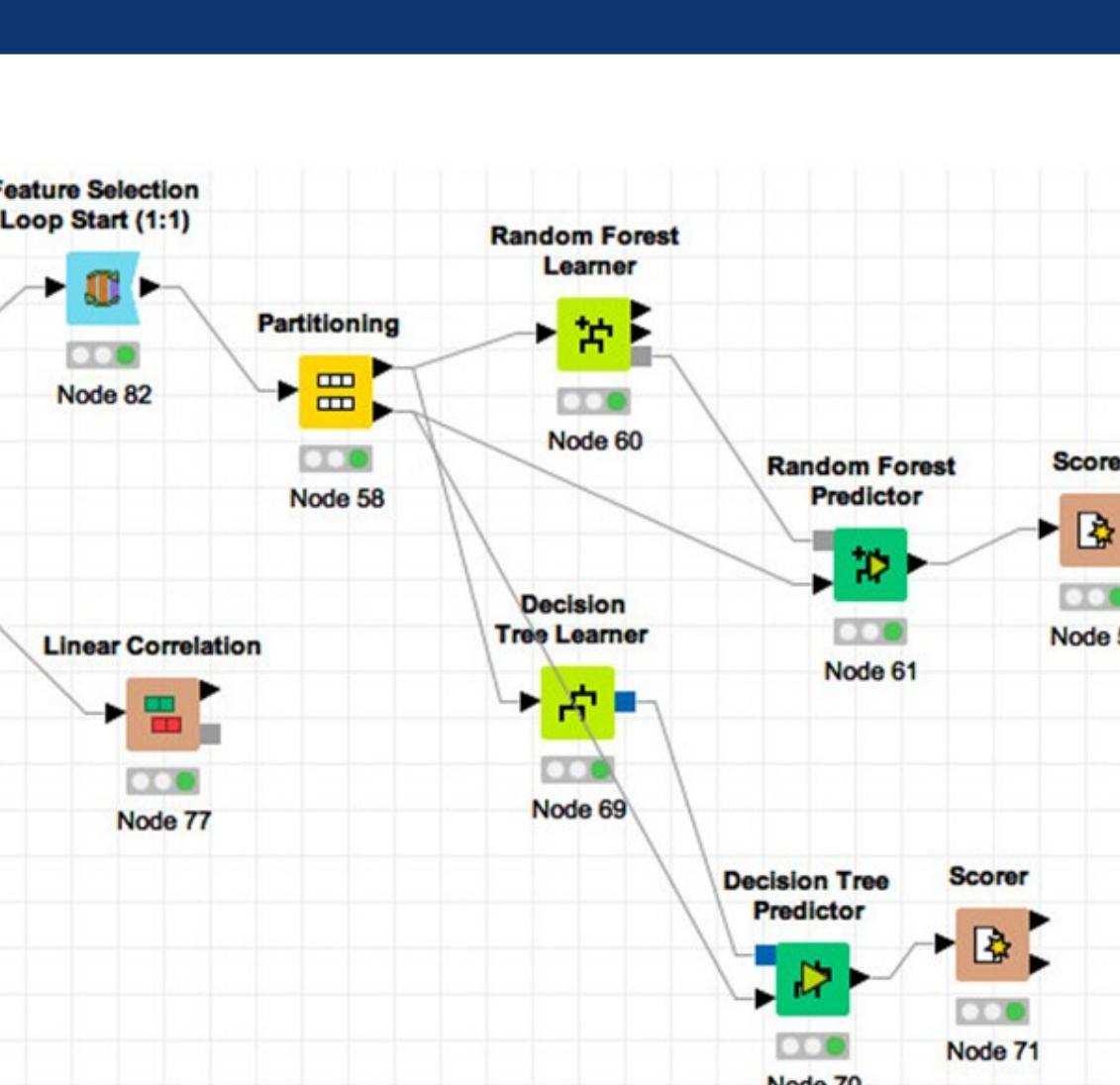
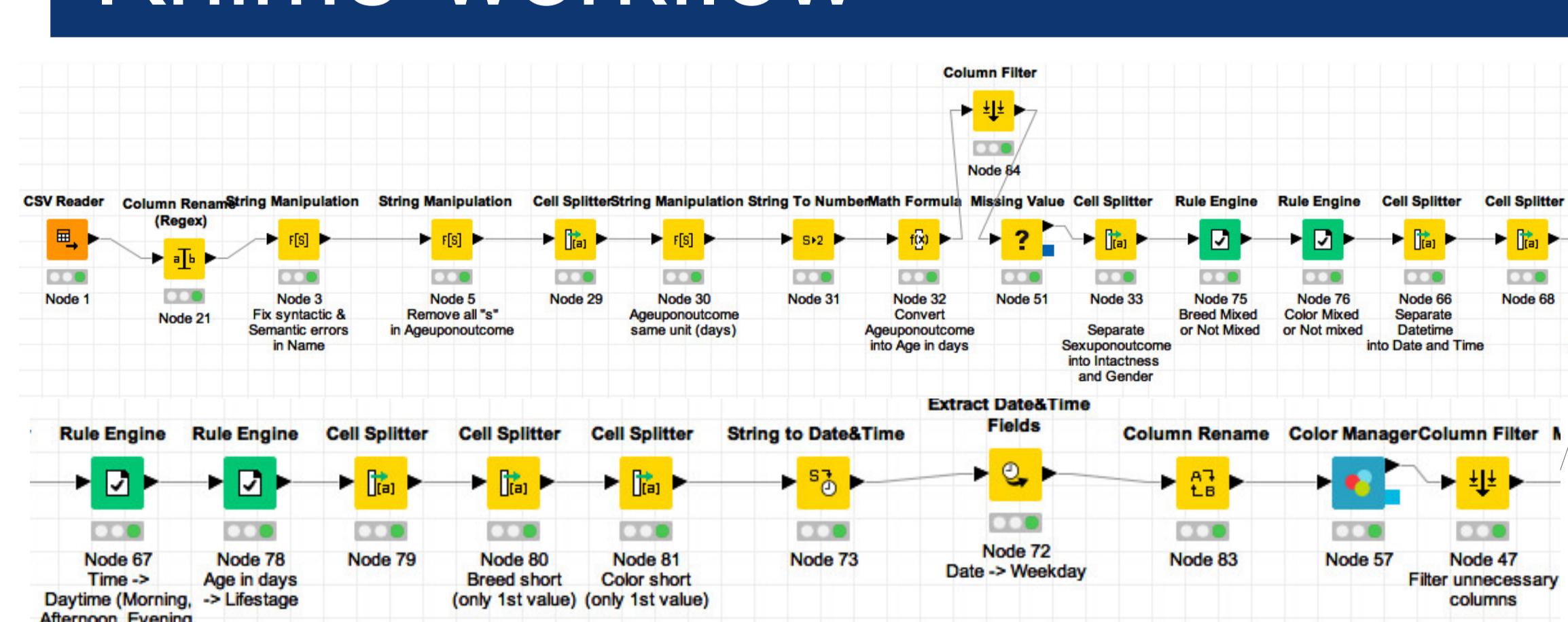
  

Correct classified	1.760
Wrong classified	913
Accuracy	65,84 %
Cohen's Kappa (k)	0,471

Confusion Matrix Random Forest					
Outcome type (Prediction)	Return to Owner	Euthanasia	Adoption	Transfer	Died
Return to owner	174	0	235	68	0
Euthanasia	28	1	17	92	0
Adoption	97	0	940	52	0
Transfer	95	0	191	667	0
Died	2	0	1	13	0

Correct classified	1.782
Wrong classified	891
Accuracy	66,67 %
Cohen's Kappa (k)	0,482

### Knime-workflow



### Conclusion

Higher accuracy + Less overfitting  
→ Random Forest classification



3 attributes with highest correlation with Outcome type  
- Animal type  
- Lifestage  
- Intactness



Accuracy rate: 66,67% on test set

