

Lab 9

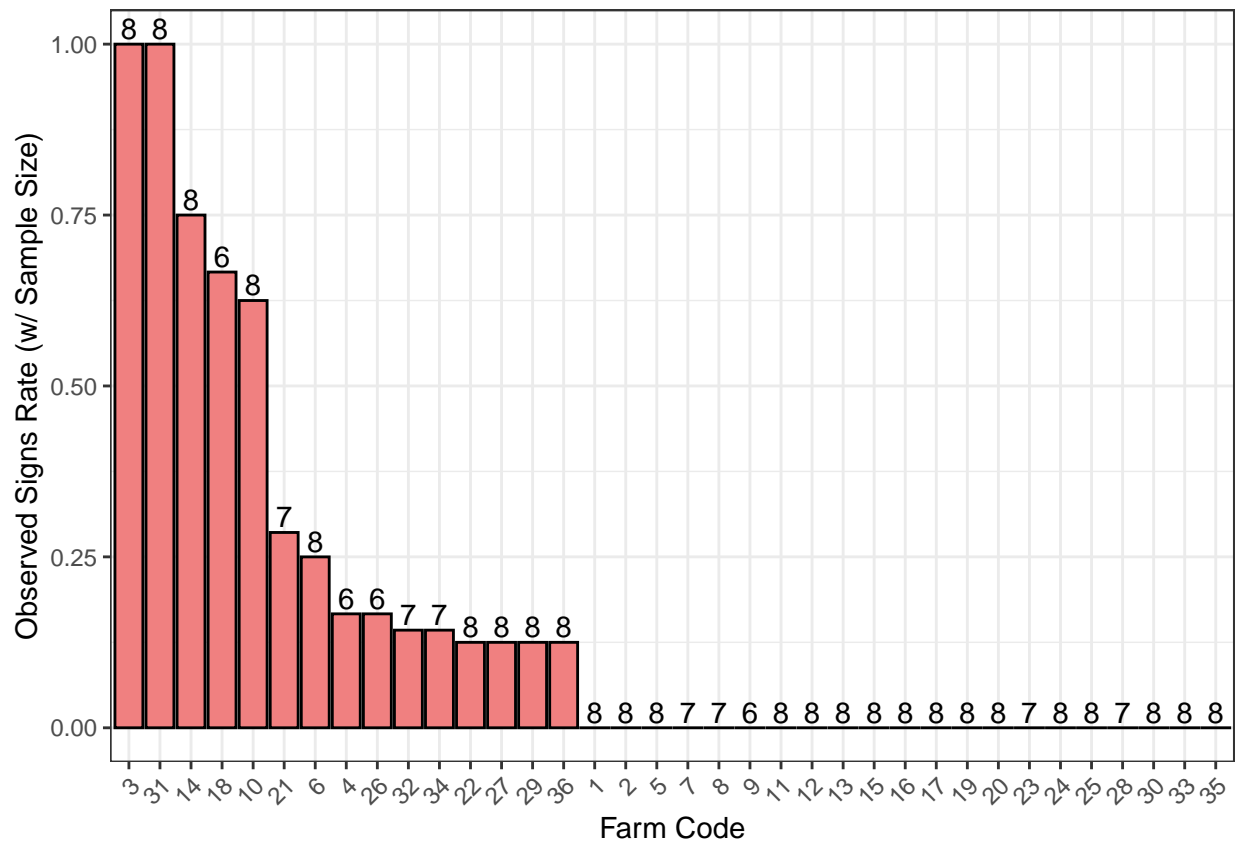
Emily Gentles

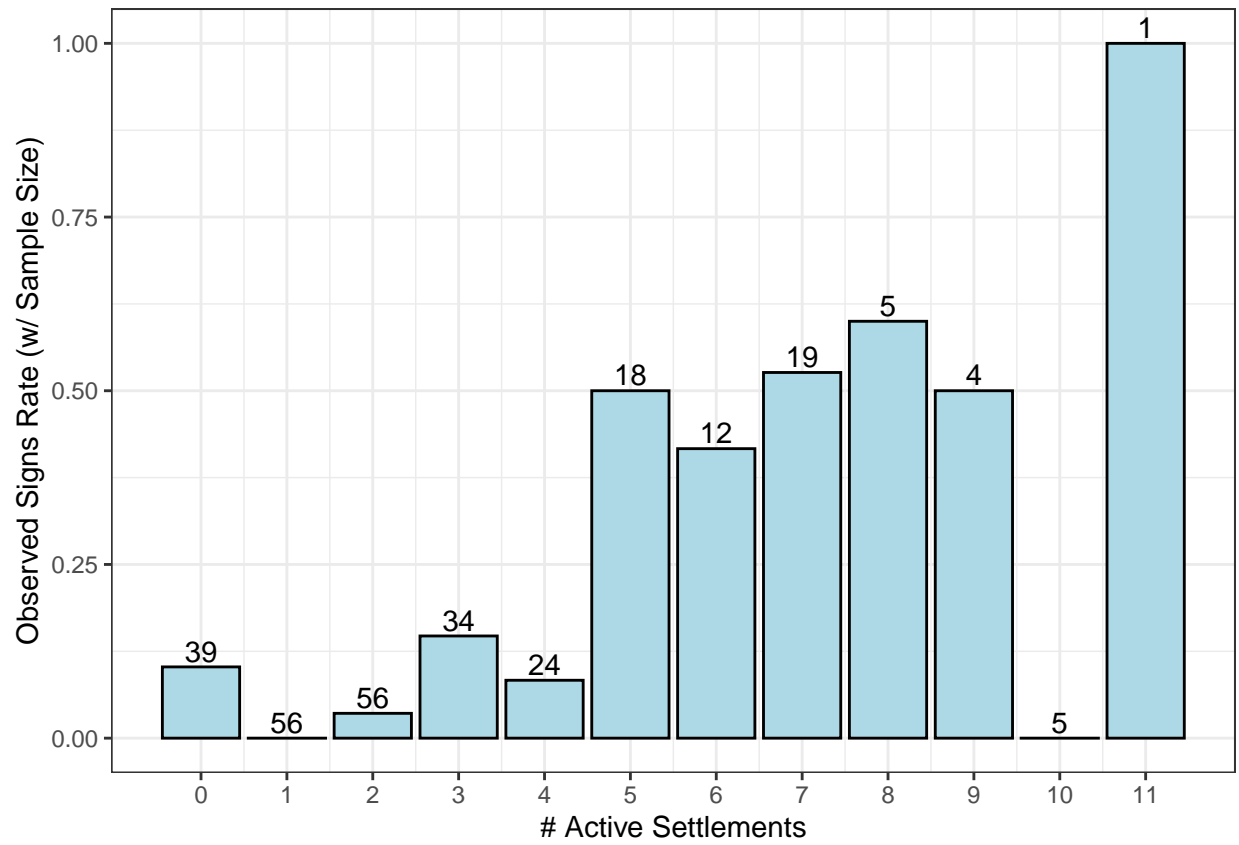
Weiye Liu

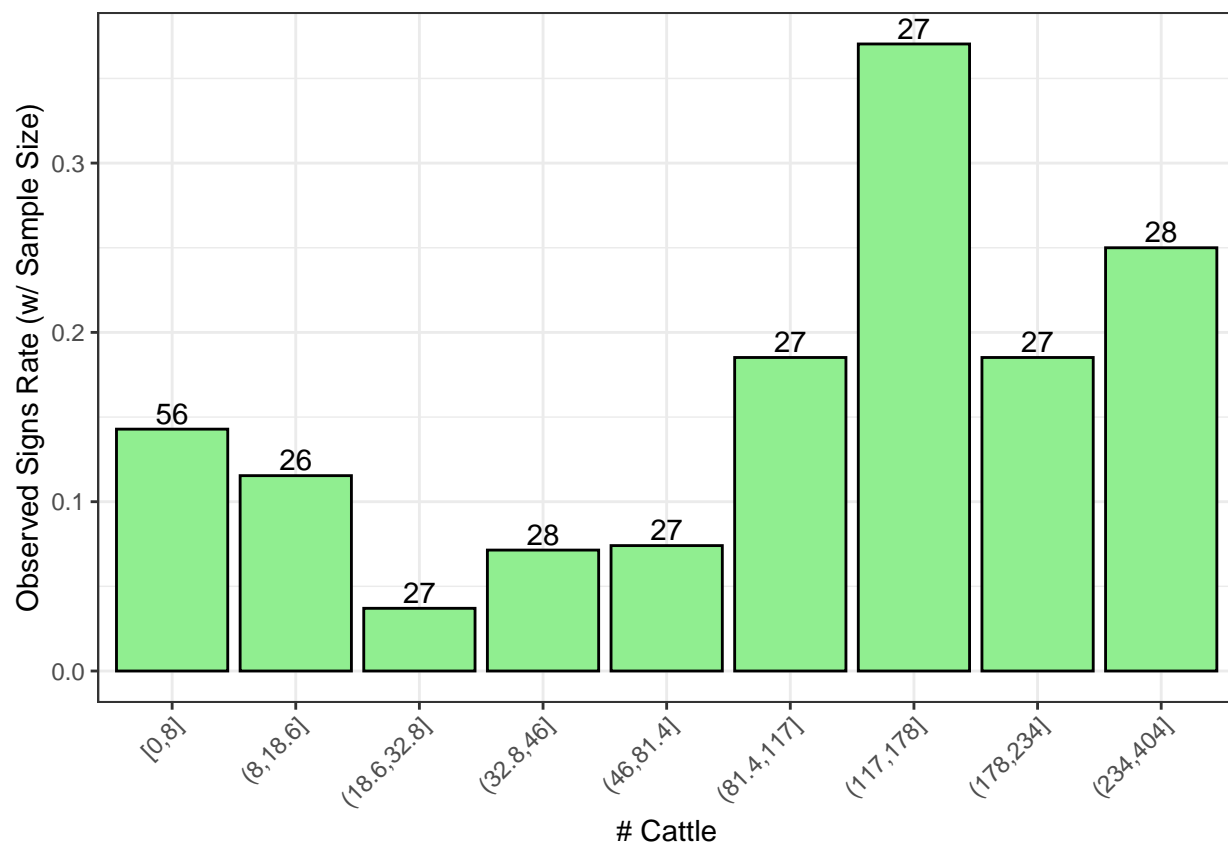
Jack McCarthy

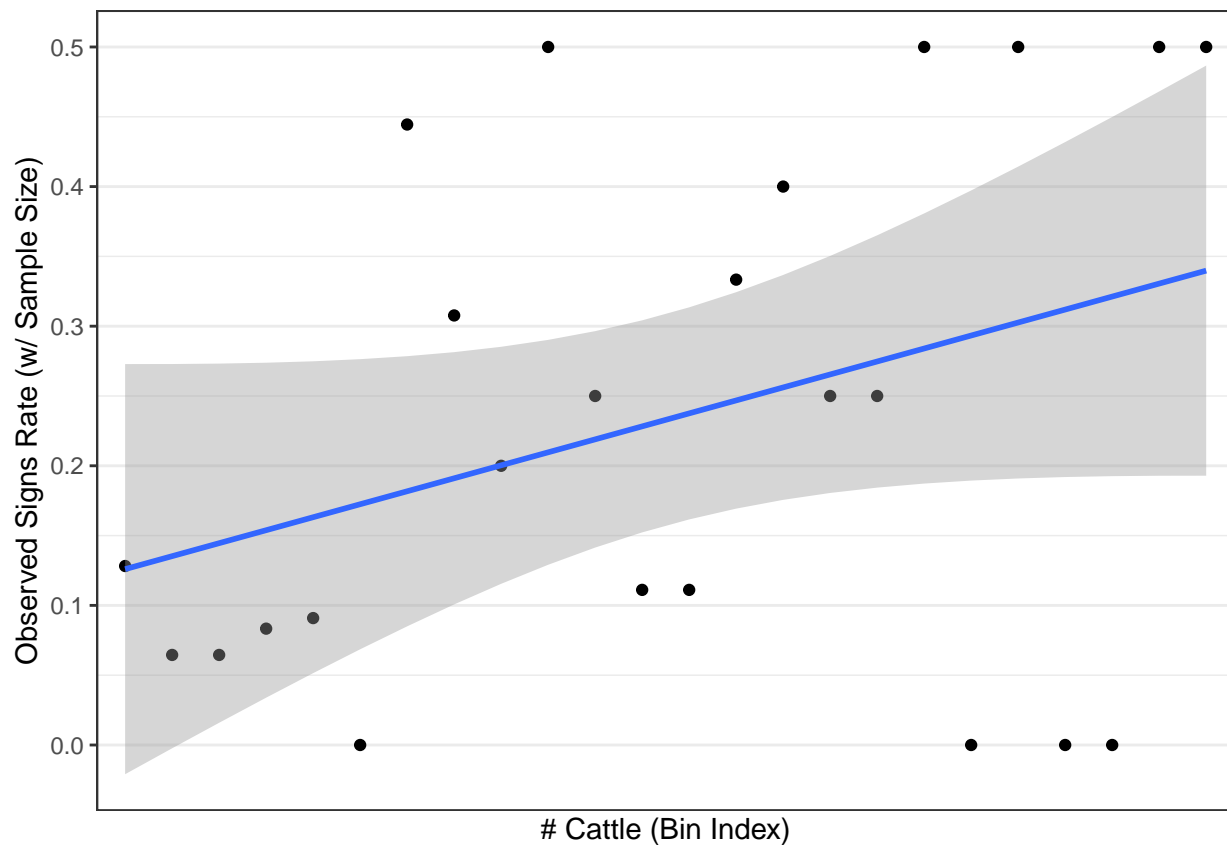
Qinzhe Wang

10/28/2021







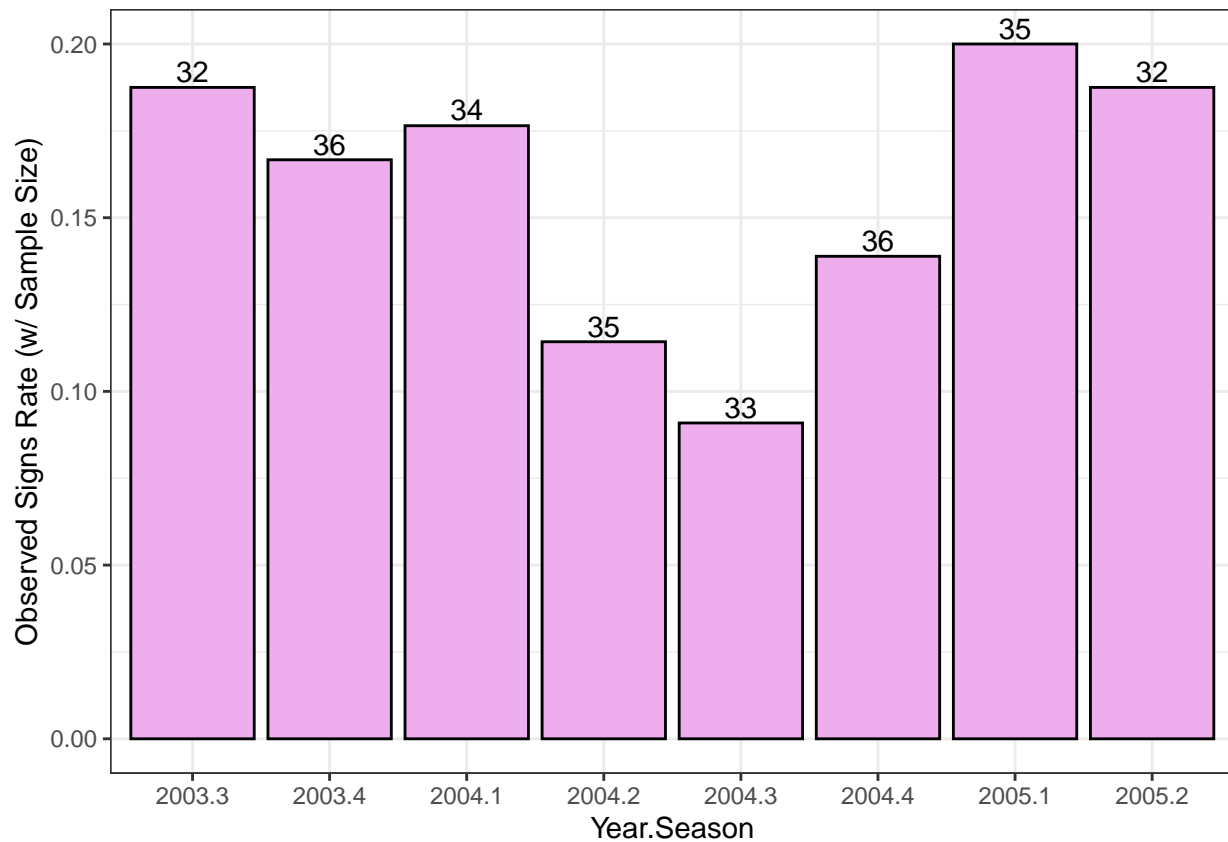


Indicator	Accuracy
accessible_cattle_house_present	0.3590
accessible_feed_present	0.2491
grass_silage	0.6154
cereal_silage	0.6740
hay_straw	0.3516
cereal_grains	0.5348
concentrates	0.5568
proteinblocks	0.8022
sugarbeet	0.7656
vegetables	0.7802
molasses	0.6703

```
## Confusion Matrix and Statistics
##
##           Reference
## Prediction  0    1
##           0 219  43
##           1   11   0
##
##           Accuracy : 0.8022
##           95% CI : (0.7499, 0.8478)
##           No Information Rate : 0.8425
##           P-Value [Acc > NIR] : 0.969
##
```

```
##           Kappa : -0.0686
##
## Mcnemar's Test P-Value : 2.459e-05
##
##           Sensitivity : 0.9522
##           Specificity : 0.0000
##           Pos Pred Value : 0.8359
##           Neg Pred Value : 0.0000
##           Prevalence : 0.8425
##           Detection Rate : 0.8022
##           Detection Prevalence : 0.9597
##           Balanced Accuracy : 0.4761
##
##           'Positive' Class : 0
##
```

The accuracy is good for some indicators because most observations are 0 for the response. The confusion matrix shows that the indicators do not have as much predictive power as it may seem from the accuracy alone.



```
## Generalized linear mixed model fit by maximum likelihood (Laplace
## Approximation) [glmerMod]
## Family: binomial ( logit )
## Formula:
## signs_in_yard ~ no_active_setts_in_fields + no_cattle_in_buildings_yard +
## year + (1 | farm_code_numeric)
```

```

## Data: model_data
## Control: glmerControl(optimizer = "bobyqa")
##
##      AIC      BIC   logLik deviance df.resid
##    158.6    180.2    -73.3    146.6     267
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.9952 -0.1948 -0.1043 -0.0618  5.8024
##
## Random effects:
##  Groups             Name             Variance Std.Dev.
## farm_code_numeric (Intercept) 6.514      2.552
## Number of obs: 273, groups: farm_code_numeric, 36
##
## Fixed effects:
##
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -5.102489   1.102378  -4.629 3.68e-06 ***
## no_active_setts_in_fields    0.510660   0.161161   3.169 0.00153 **
## no_cattle_in_buildings_yard  0.004465   0.003318   1.346 0.17844
## year2004          -0.875619   0.636503  -1.376 0.16892
## year2005           0.243728   0.686189   0.355 0.72245
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) n_ctv___ n_ctt___ yr2004
## n_ctv_stt__ -0.598
## n_cttl_n_b_ -0.285 -0.035
## year2004    -0.215 -0.055 -0.076
## year2005    -0.369  0.133 -0.103  0.549

## $farm_code_numeric

```

farm_code_numeric

