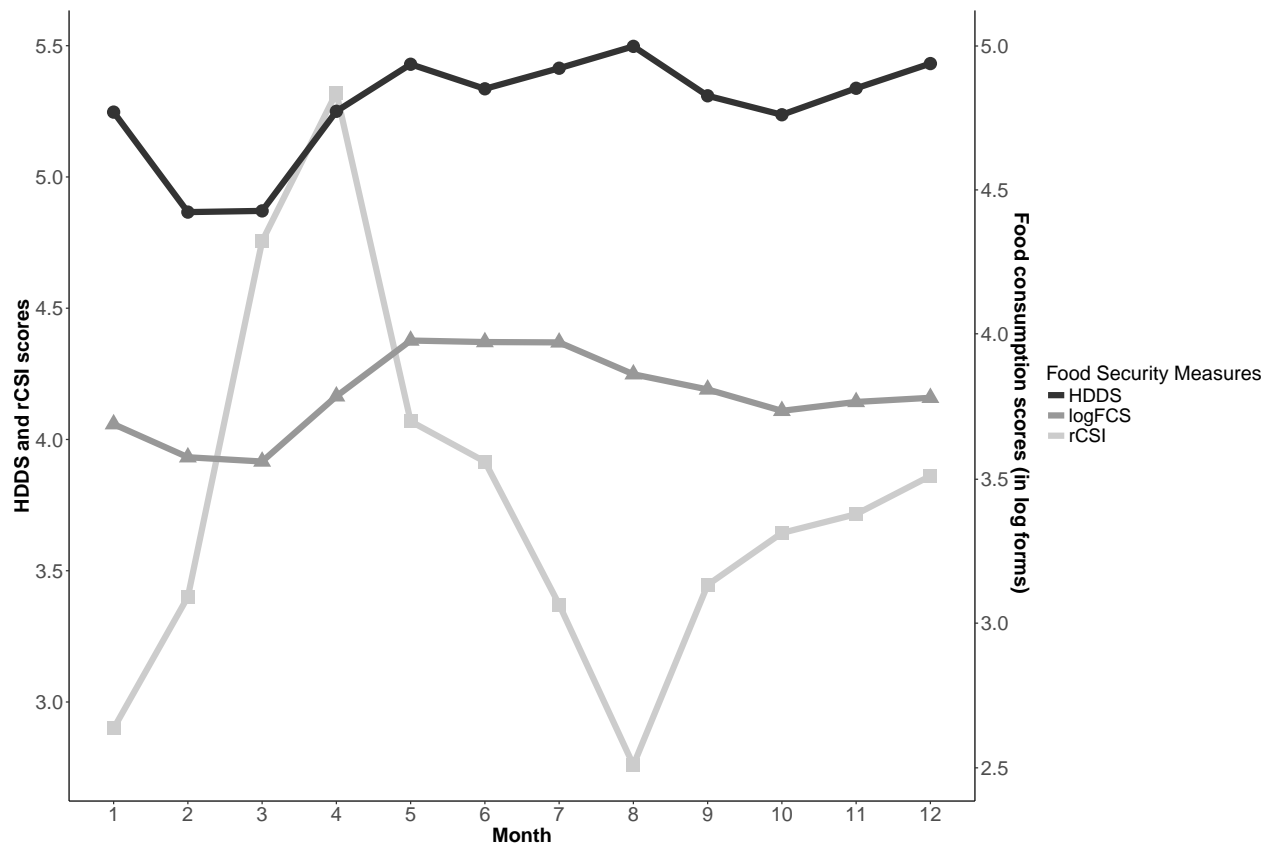


Result_writeup

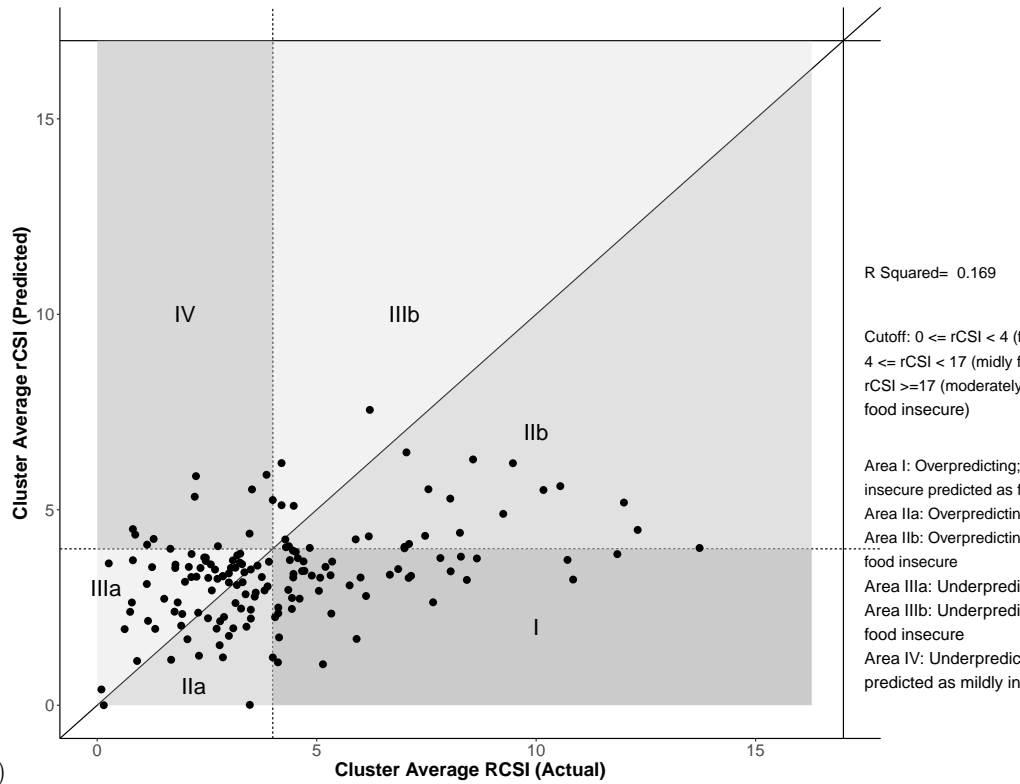
1. summary stats (pooled data of 2010 and 2013)

a. FS by month plot

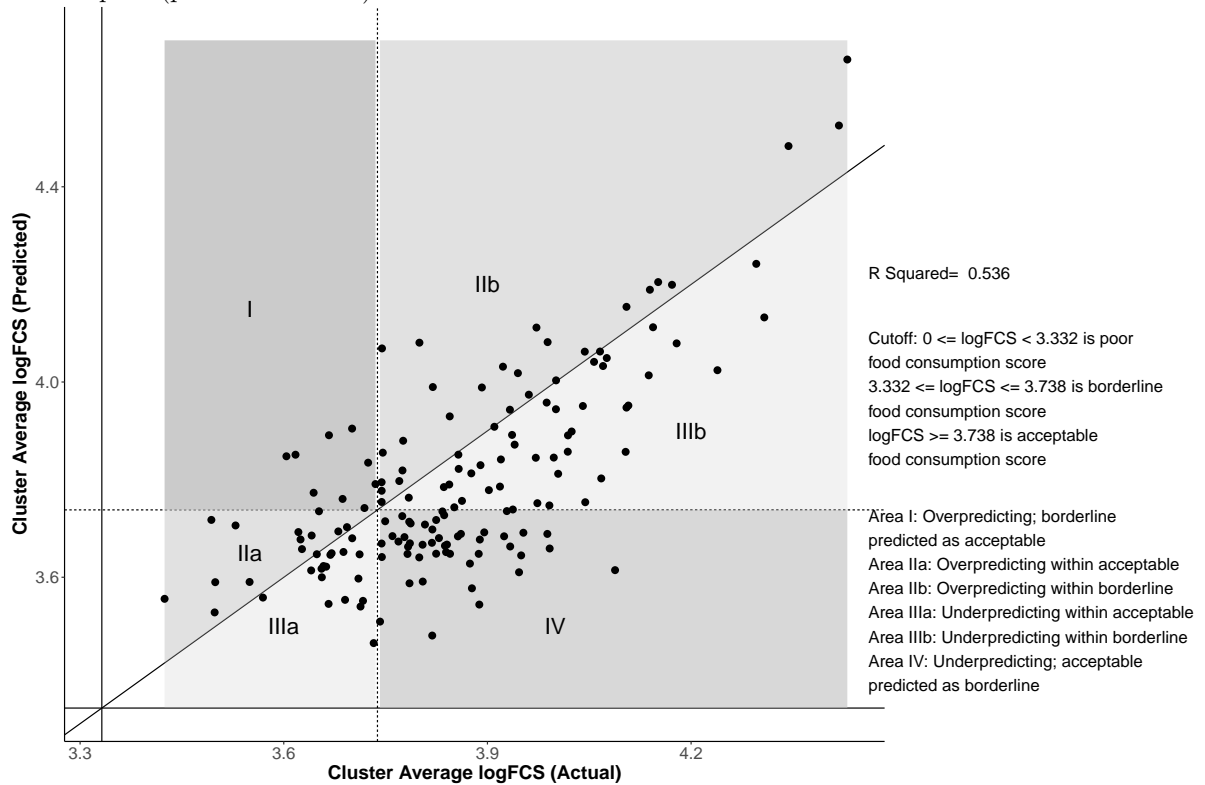


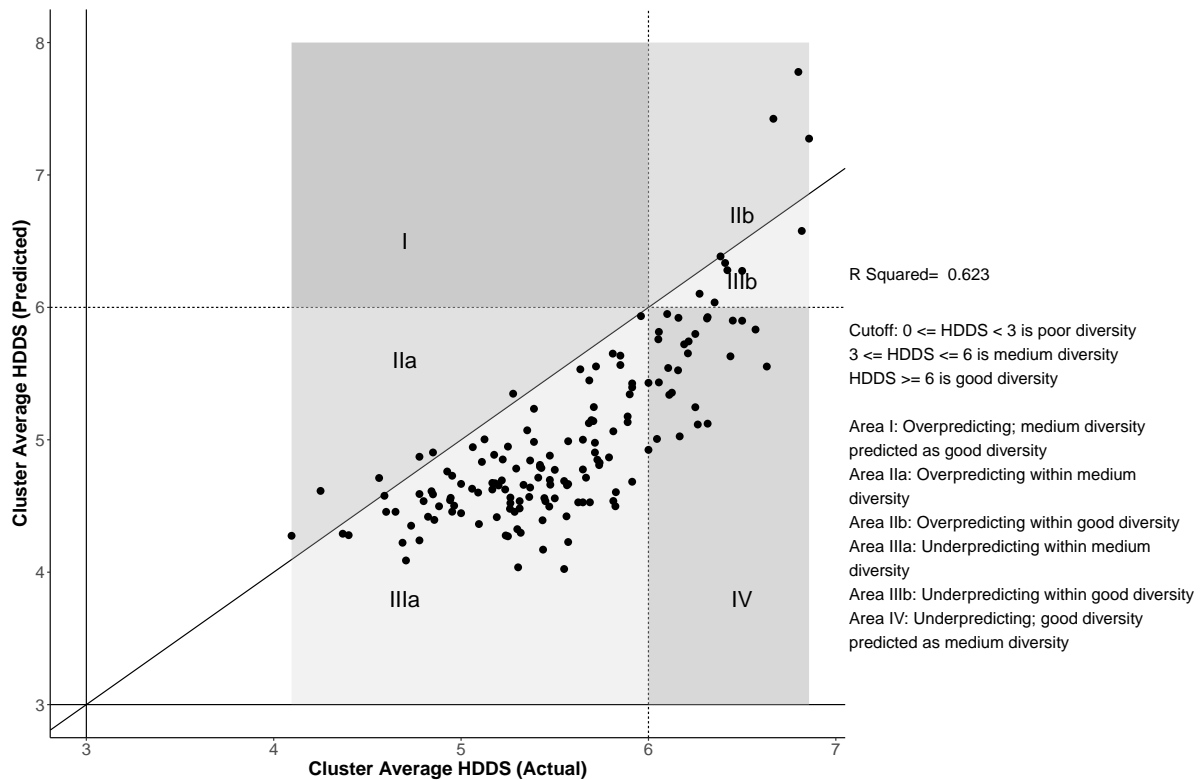
b. bar chart of variation

2. Result of 2013 prediction



a. Scatter plots (predict vs. actual)





b. Scatter plots (predict vs. actual) plus ipc only value

c. Density plot (predication using different scales + household)

i. Unexplored variation of household level

```
## <environment: R_GlobalEnv>

## Warning in cbind(predict_df$clust_logFCS_ipczone_predict_m3, predict_df
## $clust_logFCS_TA_predict_m3, : number of rows of result is not a multiple
## of vector length (arg 1)

## Warning in bind_rows(x, .id): binding factor and character vector,
## coercing into character vector

## Warning in bind_rows(x, .id): binding character and factor vector,
## coercing into character vector

## Warning in cbind(predict_df$clust_HDDS_ipczone_predict_m3, predict_df
## $clust_HDDS_TA_predict_m3, : number of rows of result is not a multiple of
## vector length (arg 1)

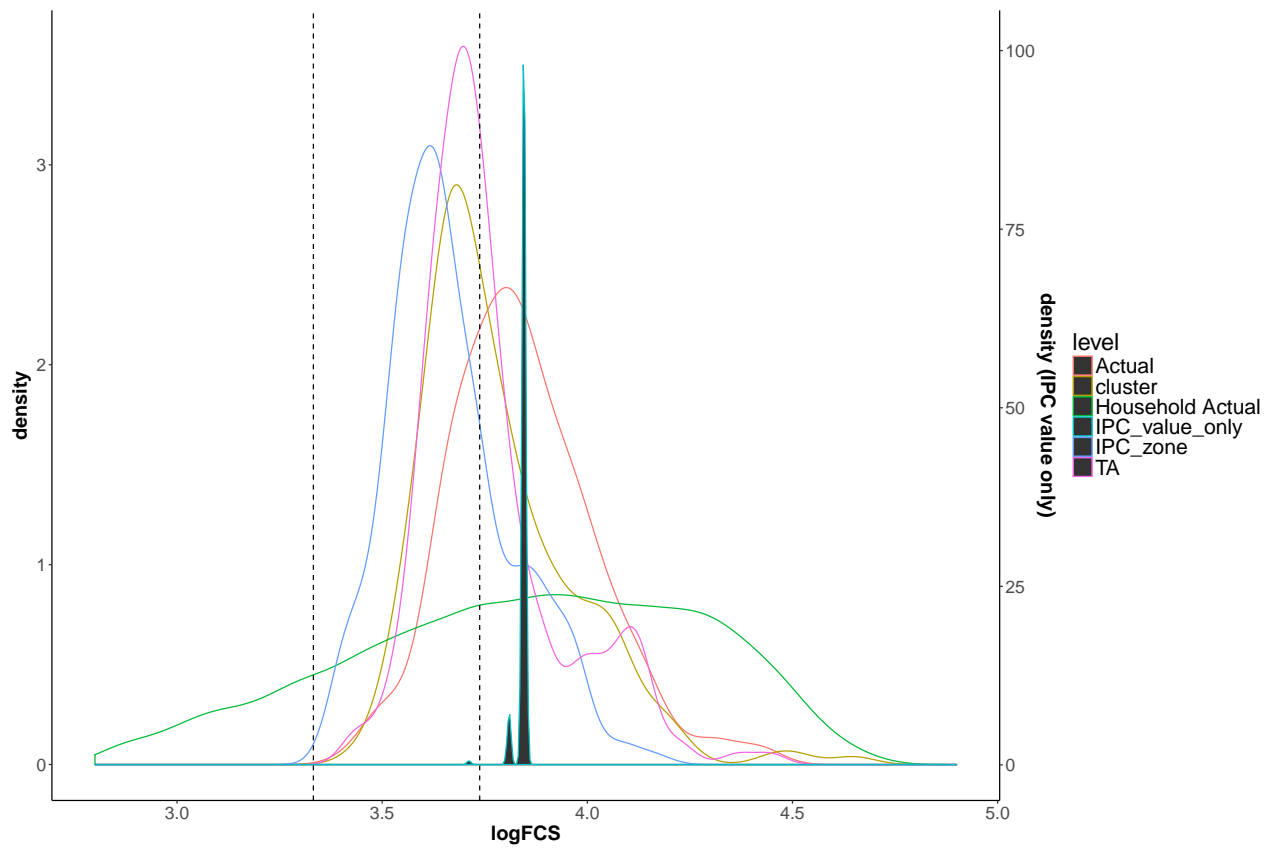
## Warning in bind_rows(x, .id): binding factor and character vector,
## coercing into character vector

## Warning in bind_rows(x, .id): binding character and factor vector,
## coercing into character vector

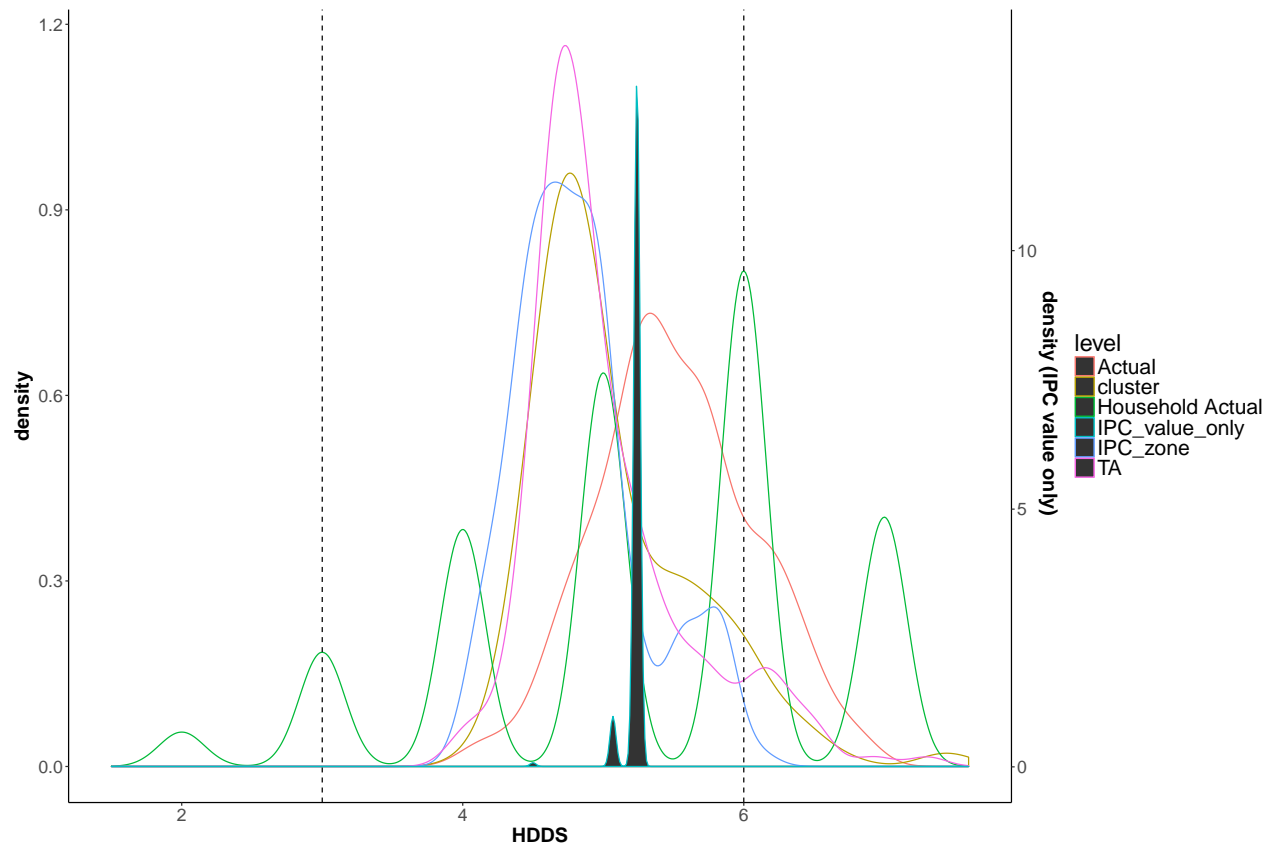
## Warning in cbind(predict_df$clust_RCSI_ipczone_predict_m3, predict_df
## $clust_RCSI_TA_predict_m3, : number of rows of result is not a multiple of
## vector length (arg 1)

## Warning in bind_rows(x, .id): binding factor and character vector,
## coercing into character vector
```

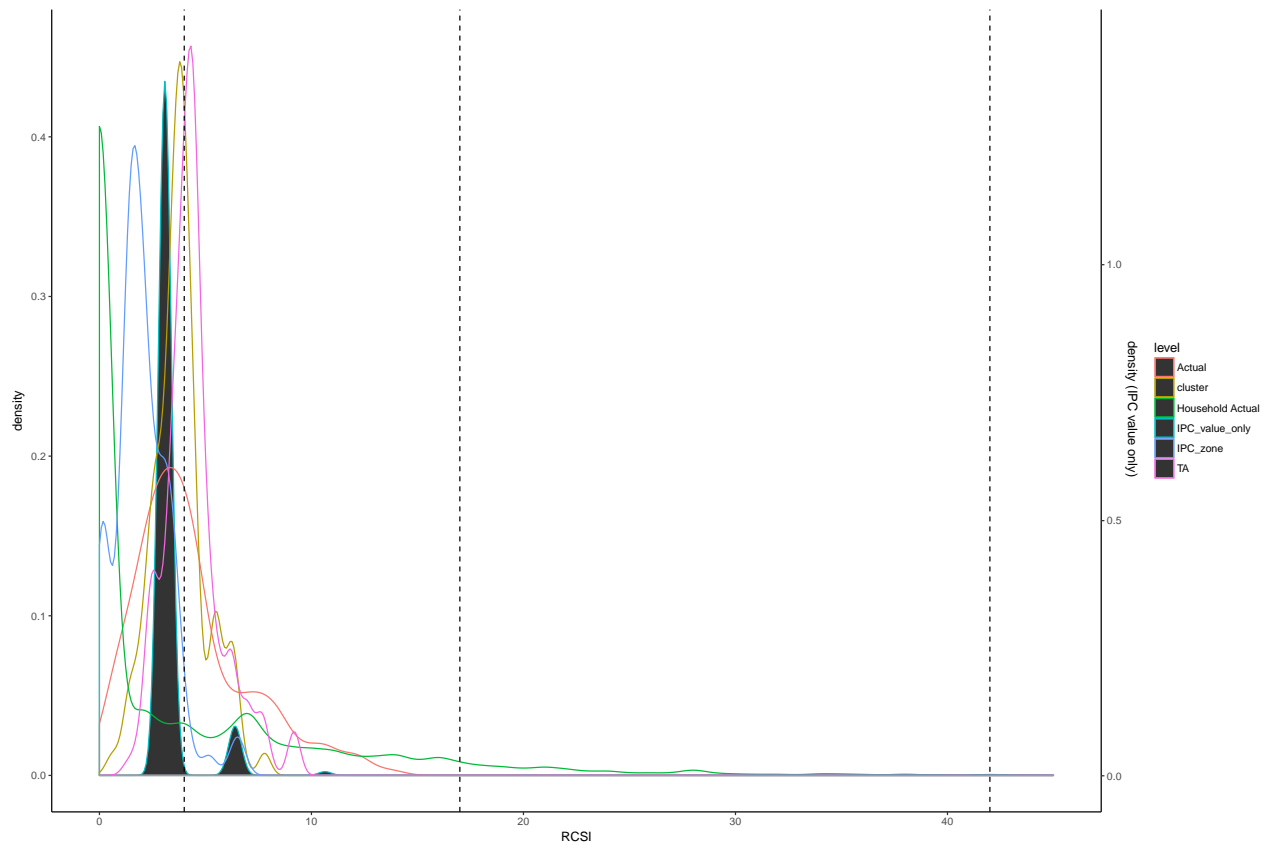
```
## Warning in bind_rows(x, .id): binding character and factor vector,
## coercing into character vector
## Warning: Removed 423 rows containing non-finite values (stat_density).
```



```
## Warning: Removed 7 rows containing non-finite values (stat_density).
```



Warning: Removed 40 rows containing non-finite values (stat_density).

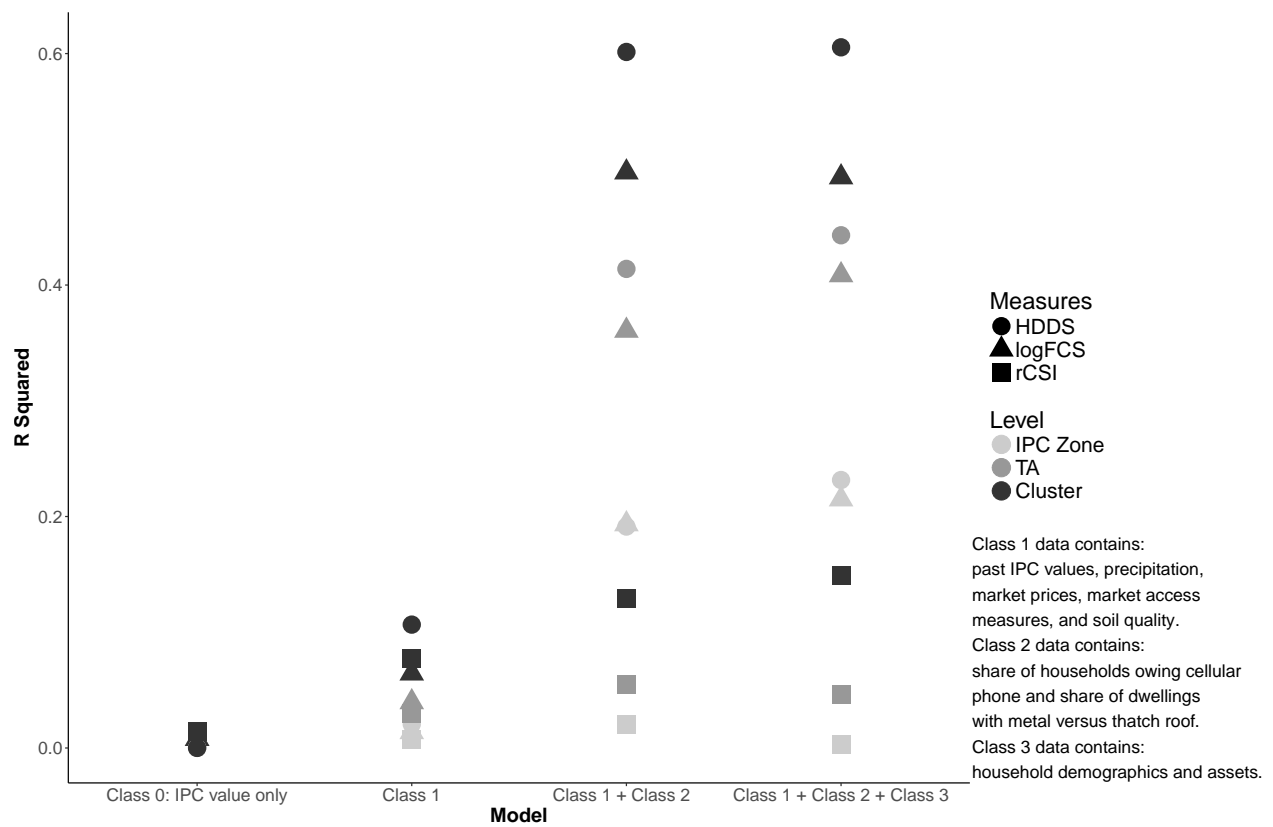
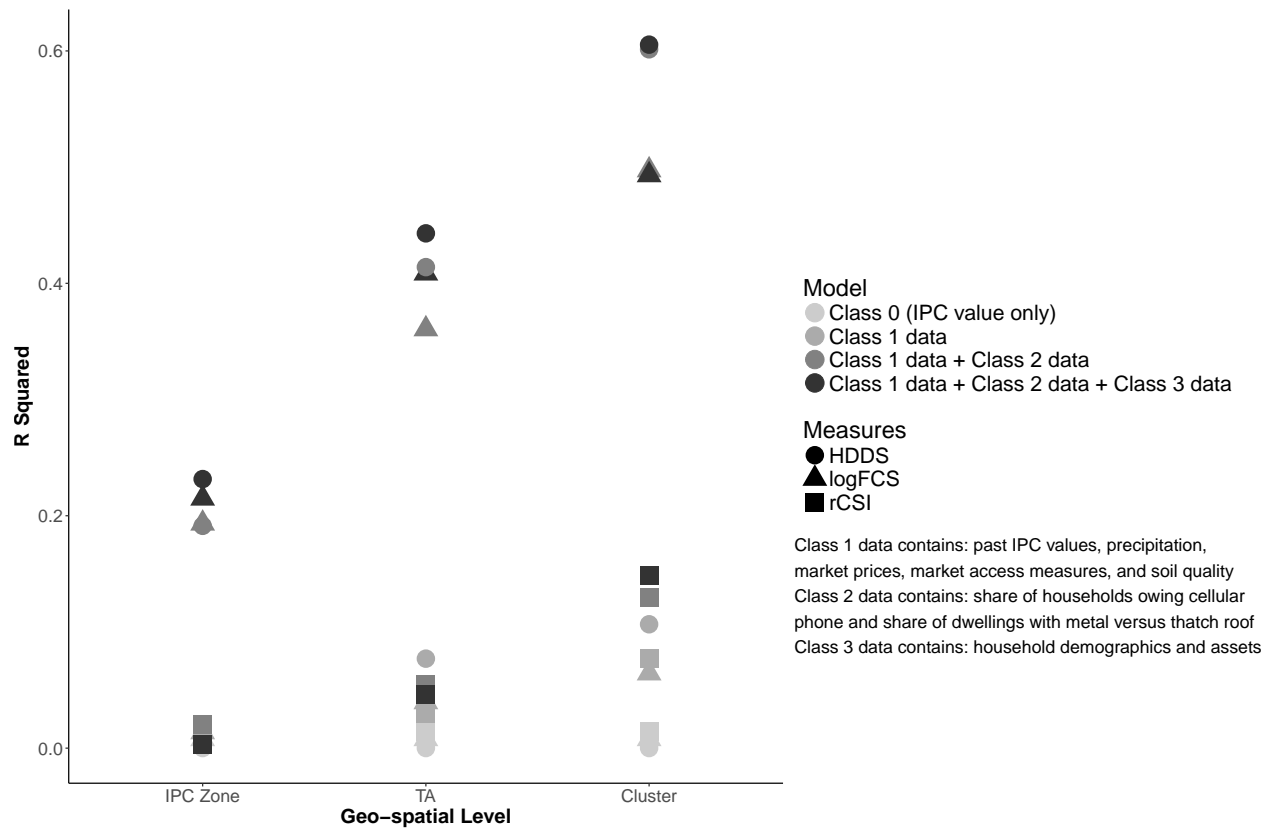


d. R Squared of 2013 predication

```
## Warning in cbind(logFCS_IPC$clust_logFCS_predict_ipc, logFCS_IPC
## $clust_logFCS_predict_ipc, : number of rows of result is not a multiple of
## vector length (arg 4)

## Warning in cbind(HDDS_IPC$clust_HDDS_predict_ipc, HDDS_IPC
## $clust_HDDS_predict_ipc, : number of rows of result is not a multiple of
## vector length (arg 4)

## Warning in cbind(RCSI_IPC$clust_RCSI_predict_ipc, RCSI_IPC
## $clust_RCSI_predict_ipc, : number of rows of result is not a multiple of
## vector length (arg 4)
```



- Discussion of classification
- hit and miss tables (for the predications)

```

i. one is cluster to actual cluster outcomes

## Loading required package: lattice

## Warning in as.POSIXlt.POSIXct(Sys.time()): unknown timezone 'zone/tz/2018c.
## 1.0/zoneinfo/America/Chicago'

## [1] 0.3012821
## [1] 0.6987179
## [1] 0.1217949
## [1] 0.8782051
## [1] 0.4358974
## [1] 0.5641026
## [1] "logFCS confusionMatrix"

## Confusion Matrix and Statistics
##
##               Reference
## Prediction   Poor Borderline Acceptable
##   Poor           0           0           0
##   Borderline     0          31          50
##   Acceptable     0           9          66
##
## Overall Statistics
##
##               Accuracy : 0.6218
##               95% CI : (0.5408, 0.6981)
##   No Information Rate : 0.7436
##   P-Value [Acc > NIR] : 0.9997
##
##               Kappa : 0.2575
##   McNemar's Test P-Value : NA
##
## Statistics by Class:
##
##               Class: Poor Class: Borderline Class: Acceptable
## Sensitivity           NA           0.7750           0.5690
## Specificity           1           0.5690           0.7750
## Pos Pred Value        NA           0.3827           0.8800
## Neg Pred Value        NA           0.8800           0.3827
## Prevalence            0           0.2564           0.7436
## Detection Rate        0           0.1987           0.4231
## Detection Prevalence  0           0.5192           0.4808
## Balanced Accuracy     NA           0.6720           0.6720
## [1] "HDDS confusionMatrix"

## Confusion Matrix and Statistics
##
##               Reference
## Prediction   Low Diversity Medium Diversity Good Diversity
##   Low Diversity           0           0           0
##   Medium Diversity        0          120          20
##   Good Diversity         0           1          15

```



```

##
## Overall Statistics
##
##           Accuracy : 0.8654
##           95% CI : (0.8016, 0.9147)
##       No Information Rate : 0.7756
##       P-Value [Acc > NIR] : 0.003282
##
##           Kappa : 0.5208
##   McNemar's Test P-Value : NA
##
## Statistics by Class:
##
##           Class: Low Diversity Class: Medium Diversity
## Sensitivity                NA                0.9917
## Specificity                1                0.4286
## Pos Pred Value             NA                0.8571
## Neg Pred Value             NA                0.9375
## Prevalence                 0                0.7756
## Detection Rate              0                0.7692
## Detection Prevalence        0                0.8974
## Balanced Accuracy           NA                0.7102
##
##           Class: Good Diversity
## Sensitivity                0.42857
## Specificity                0.99174
## Pos Pred Value             0.93750
## Neg Pred Value             0.85714
## Prevalence                 0.22436
## Detection Rate              0.09615
## Detection Prevalence        0.10256
## Balanced Accuracy           0.71015
##
## [1] "RCSI confusionMatrix"
## Confusion Matrix and Statistics
##
##           Reference
## Prediction   Food Secure Mild Moderate Severe
##   Food Secure      69    37         0      0
##   Mild             18    32         0      0
##   Moderate          0     0         0      0
##   Severe            0     0         0      0
##
## Overall Statistics
##
##           Accuracy : 0.6474
##           95% CI : (0.567, 0.7221)
##       No Information Rate : 0.5577
##       P-Value [Acc > NIR] : 0.01417
##
##           Kappa : 0.2644
##   McNemar's Test P-Value : NA
##
## Statistics by Class:
##

```

```
##                               Class: Food Secure Class: Mild Class: Moderate
## Sensitivity                   0.7931         0.4638             NA
## Specificity                   0.4638         0.7931             1
## Pos Pred Value                0.6509         0.6400             NA
## Neg Pred Value                0.6400         0.6509             NA
## Prevalence                    0.5577         0.4423             0
## Detection Rate                0.4423         0.2051             0
## Detection Prevalence          0.6795         0.3205             0
## Balanced Accuracy             0.6284         0.6284             NA
##                               Class: Severe
## Sensitivity                   NA
## Specificity                   1
## Pos Pred Value                NA
## Neg Pred Value                NA
## Prevalence                    0
## Detection Rate                0
## Detection Prevalence          0
## Balanced Accuracy             NA
```

ii. cluster predication to actual household level outcomes

```
## [1] "logFCS confusionMatrix"

## Confusion Matrix and Statistics
##
##               Reference
## Prediction   Poor Borderline Acceptable
##   Poor       0         0         0
##   Borderline 172       436       637
##   Acceptable 73        245       920
##
## Overall Statistics
##
##               Accuracy : 0.5461
##               95% CI : (0.5263, 0.5658)
##   No Information Rate : 0.6271
##   P-Value [Acc > NIR] : 1
##
##               Kappa : 0.1745
##   Mcnemar's Test P-Value : <2e-16
##
## Statistics by Class:
##
##               Class: Poor Class: Borderline Class: Acceptable
## Sensitivity    0.00000    0.6402    0.5909
## Specificity    1.00000    0.5511    0.6566
## Pos Pred Value    NaN    0.3502    0.7431
## Neg Pred Value    0.90133    0.8021    0.4884
## Prevalence      0.09867    0.2743    0.6271
## Detection Rate    0.00000    0.1756    0.3705
## Detection Prevalence 0.00000    0.5014    0.4986
## Balanced Accuracy 0.50000    0.5956    0.6237

## [1] "HDDS confusionMatrix"

## Confusion Matrix and Statistics
```

```

##
##               Reference
## Prediction      Low Diversity Medium Diversity Good Diversity
##   Low Diversity           0           0           0
##   Medium Diversity       246        1709        368
##   Good Diversity         1           55        104
##
## Overall Statistics
##
##               Accuracy : 0.7302
##               95% CI : (0.7122, 0.7475)
##   No Information Rate : 0.7104
##   P-Value [Acc > NIR] : 0.01548
##
##               Kappa : 0.1649
##   McNemar's Test P-Value : < 2e-16
##
## Statistics by Class:
##
##               Class: Low Diversity Class: Medium Diversity
## Sensitivity           0.00000           0.9688
## Specificity           1.00000           0.1460
## Pos Pred Value           NaN           0.7357
## Neg Pred Value           0.90052           0.6562
## Prevalence             0.09948           0.7104
## Detection Rate           0.00000           0.6883
## Detection Prevalence     0.00000           0.9356
## Balanced Accuracy         0.50000           0.5574
##
##               Class: Good Diversity
## Sensitivity           0.22034
## Specificity           0.97215
## Pos Pred Value           0.65000
## Neg Pred Value           0.84158
## Prevalence             0.19009
## Detection Rate           0.04188
## Detection Prevalence     0.06444
## Balanced Accuracy         0.59625
##
## [1] "RCSI confusionMatrix"
## Confusion Matrix and Statistics
##
##               Reference
## Prediction      Food Secure Mild Moderate Severe
##   Food Secure       1463   352         61         0
##   Mild              408   147         52         0
##   Moderate           0     0          0         0
##   Severe             0     0          0         0
##
## Overall Statistics
##
##               Accuracy : 0.6484
##               95% CI : (0.6293, 0.6672)
##   No Information Rate : 0.7535
##   P-Value [Acc > NIR] : 1

```

```
##
##          Kappa : 0.0785
## McNemar's Test P-Value : NA
##
## Statistics by Class:
##
##          Class: Food Secure Class: Mild Class: Moderate
## Sensitivity          0.7819      0.2946      0.00000
## Specificity          0.3252      0.7681      1.00000
## Pos Pred Value       0.7799      0.2422      NaN
## Neg Pred Value       0.3278      0.8124      0.95449
## Prevalence           0.7535      0.2010      0.04551
## Detection Rate       0.5892      0.0592      0.00000
## Detection Prevalence 0.7555      0.2445      0.00000
## Balanced Accuracy    0.5535      0.5314      0.50000
##
##          Class: Severe
## Sensitivity          NA
## Specificity          1
## Pos Pred Value       NA
## Neg Pred Value       NA
## Prevalence           0
## Detection Rate       0
## Detection Prevalence 0
## Balanced Accuracy    NA
```

1. how bad it can be to just target the cluster level ?
2. put it in SI ?
3. 2010 data (only what matters for 2010 is the tables (coefficients and variables))
 - a. regression results
 - b. discussion on the coefficients