

Case 3-1 Stat 440

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Introduction

The data are from a study malaria presence in Gambia. Each observation corresponds to one child who has been tested for the presence of malaria. We are interested in the factors predictive of the malaria parasites found in the blood for n=805 children. The goal of the analysis is to perform inferences on the impact of age, presence of bednet, presence of clinic, and amount of surrounding greenery on a child having malaria, where greenery is a measure of how much vegetation is around the child's village based on satellite village. A summary of the variables is found below:

Variable Name	Short Description	Type
Y	indicator of whether malaria parasites were found in the blood of the child	binary
AGE	age of child in years	continuous
BEDNET	indicator of whether the child has a benet over his or her bed	binary
GREEN	a measure of how much greenery is around the child's village, derived from satellite images	continuous
PHC	indicator for the presence of a public health clinic in the child's village	binary

Data

```
## [1] 805 5
```

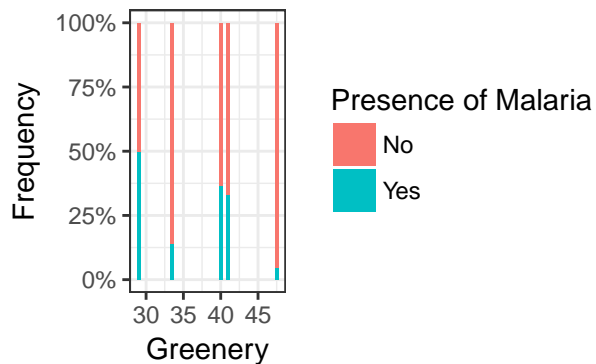
Imputation

```
##  
## Call:  
## glm(formula = missing ~ Y + AGE + GREEN + as.factor(PHC), data = gambia)  
##  
## Deviance Residuals:
```

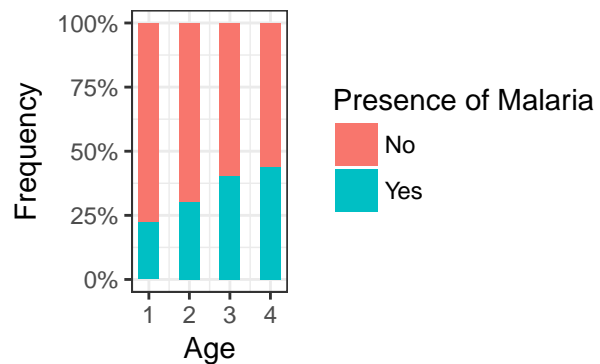
```
##      Min      1Q   Median      3Q      Max
## -0.7748 -0.3566 -0.1566   0.4128   0.9820
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.256489   0.186907  -1.372   0.170
## Y            -0.031669   0.033638  -0.941   0.347
## AGE           0.170278   0.013713  12.417 < 2e-16 ***
## GREEN         0.002550   0.004489   0.568   0.570
## as.factor(PHC)1 0.228686   0.033099   6.909 9.95e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for gaussian family taken to be 0.1893755)
##
##      Null deviance: 192.17  on 804  degrees of freedom
## Residual deviance: 151.50  on 800  degrees of freedom
## AIC: 951.94
##
## Number of Fisher Scoring iterations: 2
```

EDA

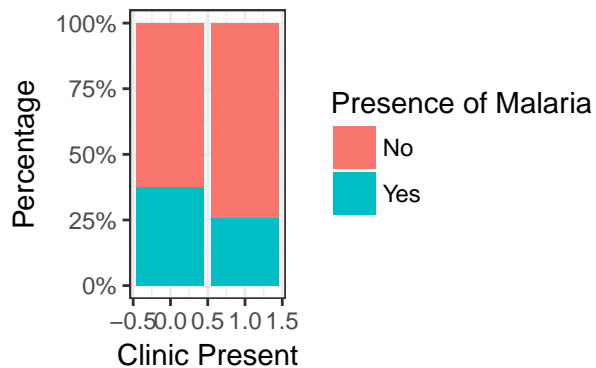
Freq of Ppl w/ Malaria by Greenery



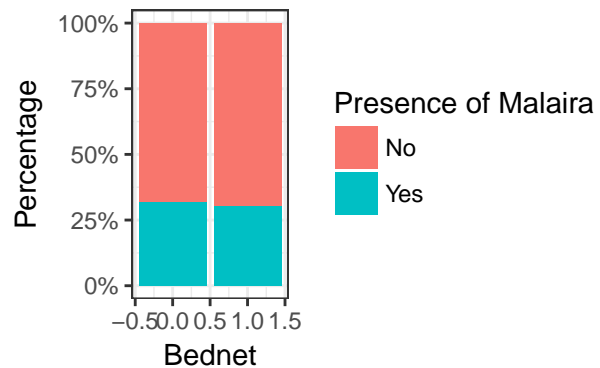
Freq of Ppl w/ Malaria by Age



% of Ppl w/ Malaria by Clinic Present



% of Ppl w/ Malaria by Bednet



References

<http://www.stat.columbia.edu/~gelman/arm/missing.pdf>