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Assignment	Lab 3
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A number of Poisson and Binomial likelihood regession models were fitted to the dataset

1) $y_i \sim \text{Poisson}(\lambda_i)$, $\log(\lambda_i) <- \alpha + \beta_1 * x_i + \beta_2 * z_i$ DIC = 189.901
2) $y_i \sim \text{Poisson}(\lambda_i)$, $\log(\lambda_i) <- \alpha + \beta_1 * (x_i - \mu_x) + \beta_2 * (z_i - \mu_z)$ DIC = 191.570
3) $y_i \sim \text{Poisson}(\lambda_i)$, $\log(\lambda_i) <- \alpha + \beta_1 * x_i + \beta_2 * \log(z_i)$ DIC = 210.878
4) $y_i \sim \text{Bin}(n, p_i)$, $\text{logit}(p_i) <- \alpha + \beta_1 * x_i + \beta_2 * z_i$ DIC = 157.011 (**)
5) $y_i \sim \text{Bin}(n, p_i)$, $\text{logit}(p_i) <- \alpha + \beta_1 * (x_i - \mu_x) + \beta_2 * (z_i - \mu_z)$ DIC = 157.439

Using these with vector **x** = Distance column , **z** = No. Tries Column and **y** = No. Successes, yielded DIC values indicated above.

Model 4 above has the lowest DIC value, this indicates it fits the data the best.

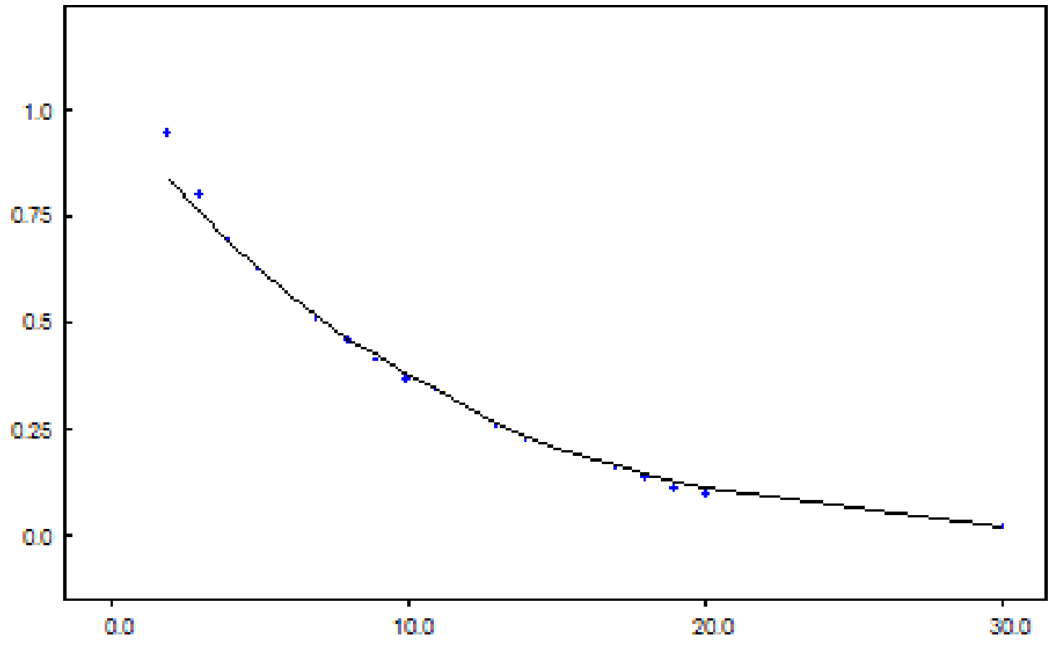
The estimates for regression parameters for model 4 are;

Parameter	**Estimate**	**Standard Deviation**
α	0.7336	0.1183
β_1	-0.1612	0.009171
β_2	0.00163	1.222E-4

The estimate's of the proportion of successes from 5, 10, and 30 feet are given below

Distance	**Estimate proportion of successes**
5	0.6231
10	0.3653
30	0.01943

Below is a lot of the data along with the fitted regression slope , from this and the estimate above the odds of landing a put from 30 feet are 1 in 50.



Appendix

```
Golf putting model

model{
        for (i in 1:N){
                        Tries[i] ~ dflat()
                        Success[i] ~ dbin(p[i],Tries[i])
                        logit(p[i]) <- alpha + beta1*Dist[i]+ beta2*Tries[i]
        }
        alpha ~ dflat()
        beta1 ~ dflat()
        beta2 ~ dflat()
}

# The data
list(N=20)
        Dist[] Tries[] Success[]
        2       1443    1346
        3       694      577
        4       455     337
        5       353     208
        6       272     149
        7       256     136
        8       240     111
        9       217     69
        10      200     67
        11      237     75
        12      202     52
        13      192     46
        14      174     54
        15      167     28
        16      201     27
        17      195     31
        18      191     33
        19      147     20
        20      152     24
        30  100   0
END


# Initial values
list(alpha=0,beta1=0,beta2=0)
```