Econometrics Data Assignment - 2

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Our Allotted Health Indicator - **Percentage of infant deaths due to Asphyxia (to total reported infant deaths) - v41**

Q1)
Ans 1)
For our health indicator we have chosen the following model:

$$v41 = \beta_0 + \beta_1(gdp) + \beta_2(beds) + \beta_3(yieldtonneshectare) + \beta_4(v19) + \beta_5(v7) + \beta_6(v3) + \beta_7(v13) + \beta_8(v27) + u$$

Where
gdp - State-wise GDP from 2011 to 2019
beds - No. of beds available in hospitals
yieldtonneshectare - Agricultural yield per hectare of land
v19 - Women Received Post-Natal Care or Post Partum check-up between 48 hours - 14 days of delivery.
v7 - Women having tested with severe anemia with hemoglobin(Hb) and are being treated at an institution
v3 - Pregnant women received 3 Ante Natal Care (ANC) check-ups
v13 - Institutional Deliveries
v27 - Newborns having weight less than 2.5 kg

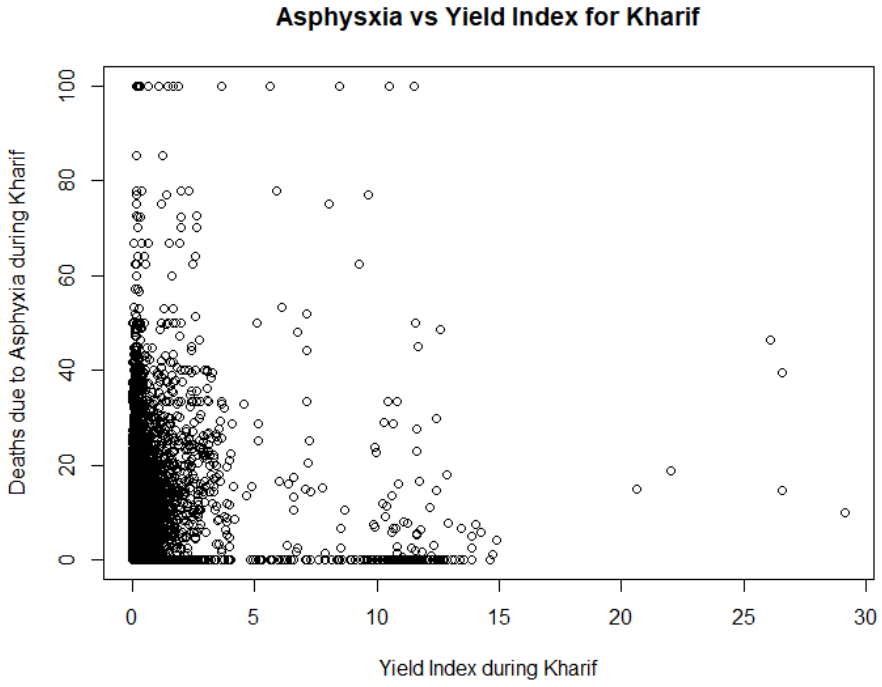
We have divided this model into **4 sub-models**, which are:

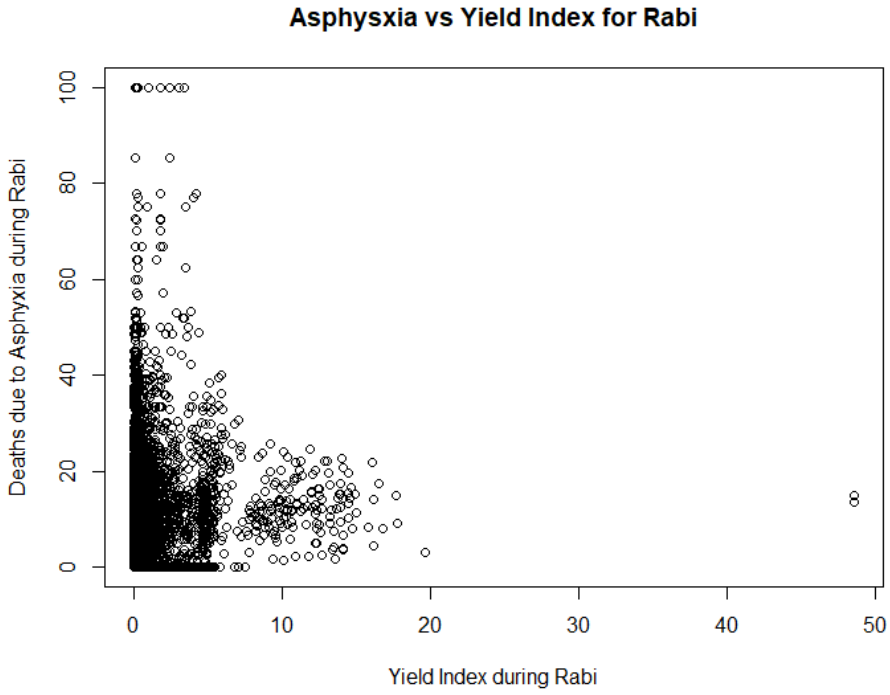
1) Kharif and Foodgrain
2) Kharif and Commercial
3) Rabi and Foodgrain
4) Kharif and Commercial

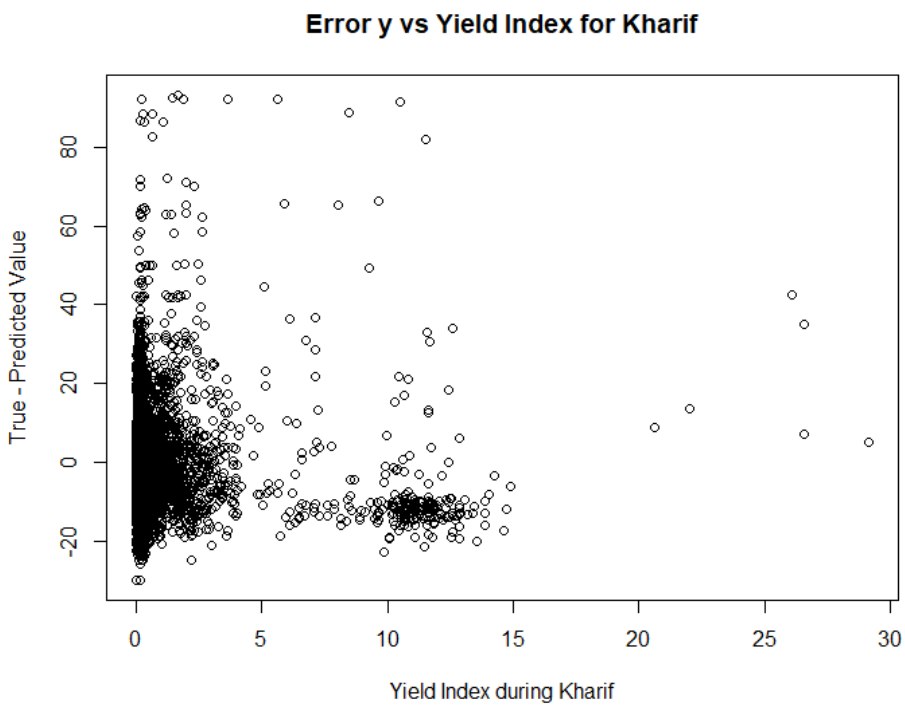
We selected these sub-divisions so that we can analyse the effect of different crops and their nutrition on the mother and thus find the relationship between our allotted health indicator and the yieldtonneshectare.

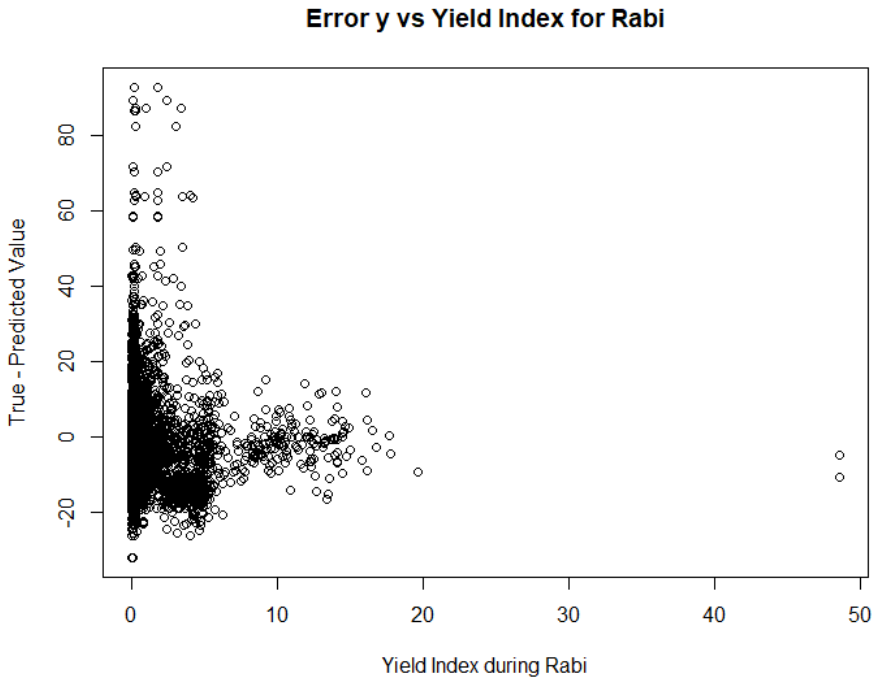
We selected v19 because this tells us the number of cases when post natal care is required which could indicate towards the child suffering from Asphyxia.
Anemia means the lack of haemoglobin in the blood which leads to the lack of oxygen. This could affect the child and cause asphyxia and that is why we selected this variable.
When a pregnant woman gets Pre Natal Care, there is higher chance that the offspring will be healthy at time of birth and thus we selected v3 as a variable.
Deliveries that take place in proper institutions receive proper medical care and equipments which reduces the chance of death due to Asphyxia, so we selected the v13 variable.
Asphyxia is more prominent in new borns with lower weight and this is the reason why we selected v27 as one of our variables.

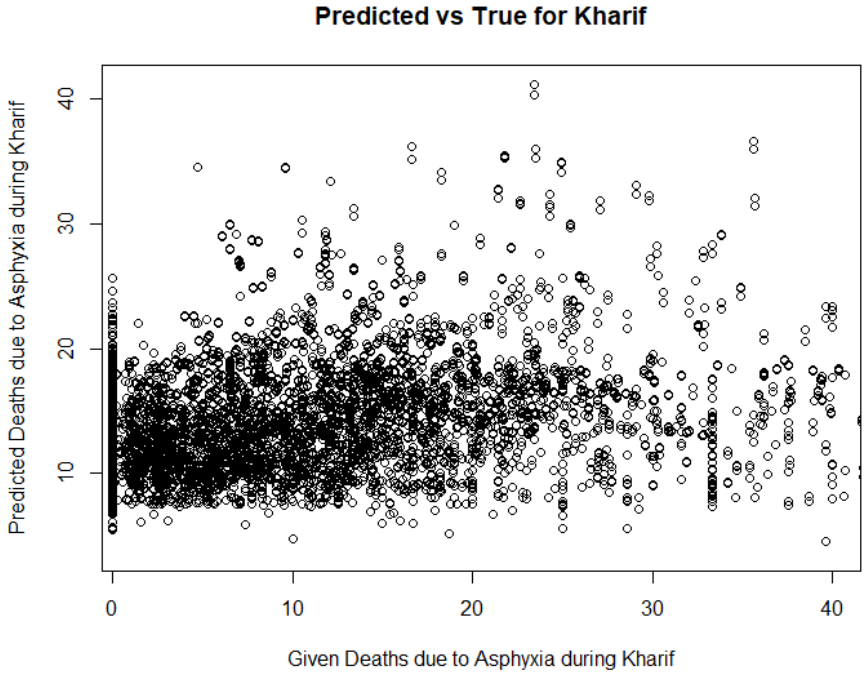
(b)

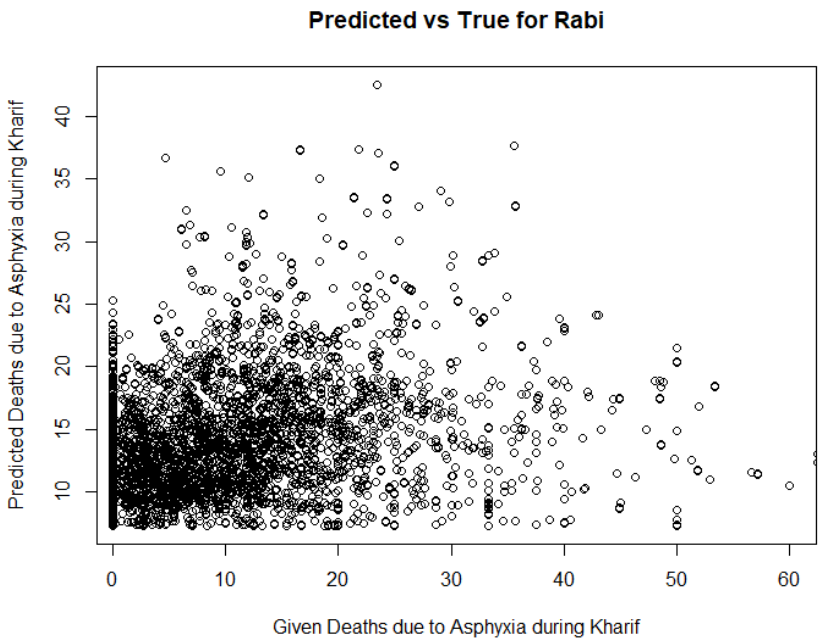



Asphysxia vs Yield Index for Rabi
Deaths due to Asphyxia during Rabi
Yield Index during Rabi
0
20
40
60
80
100
0
10
20
30
40
50

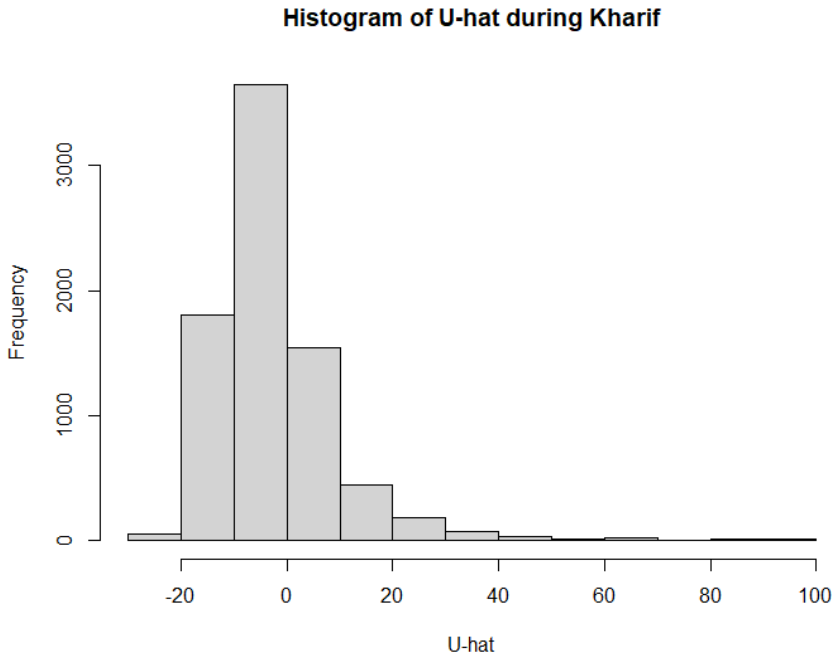

Error y vs Yield Index for Kharif
True - Predicted Value
Yield Index during Kharif
-20
0
20
40
60
80
0
5
10
15
20
25
30


Error y vs Yield Index for Rabi
True - Predicted Value
-20
0
20
40
60
80
0
10
20
30
40
50
Yield Index during Rabi

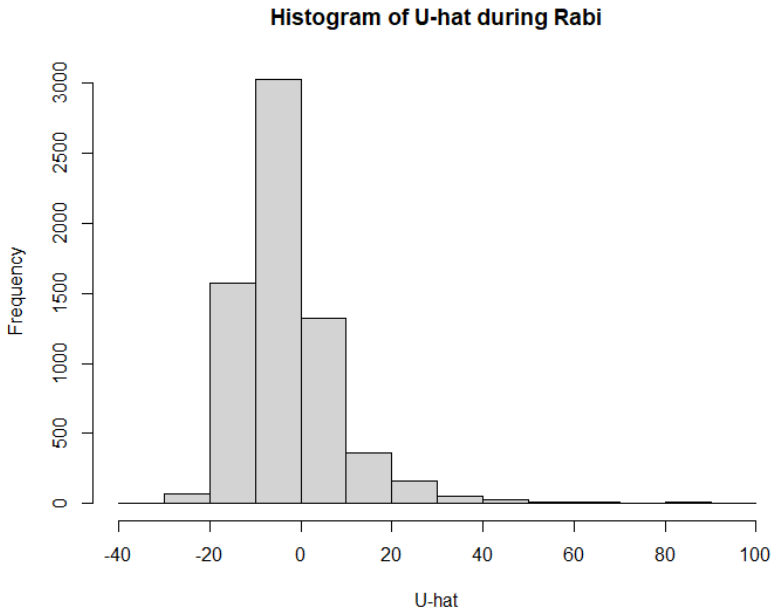

Predicted vs True for Kharif
Predicted Deaths due to Asphyxia during Kharif
10
20
30
40
0
10
20
30
40
Given Deaths due to Asphyxia during Kharif



(c)

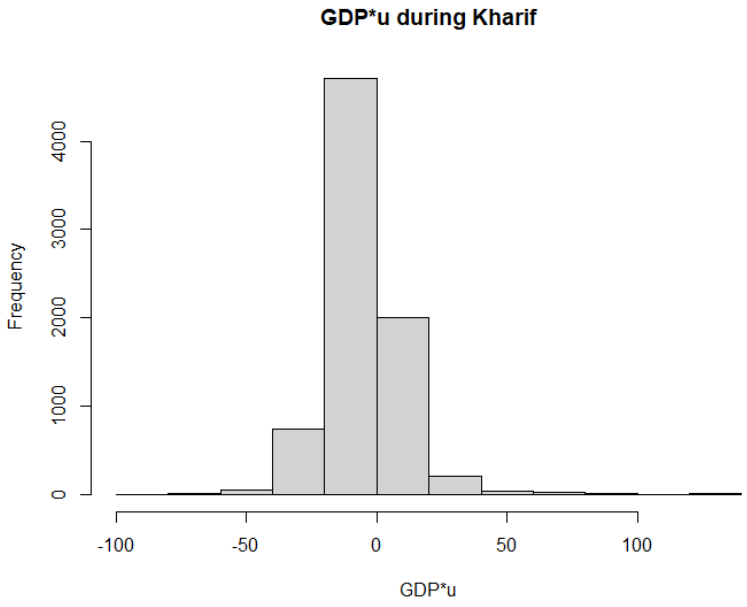


Summation(U-hat) != 0



Summation(U-hat) != 0

(d)



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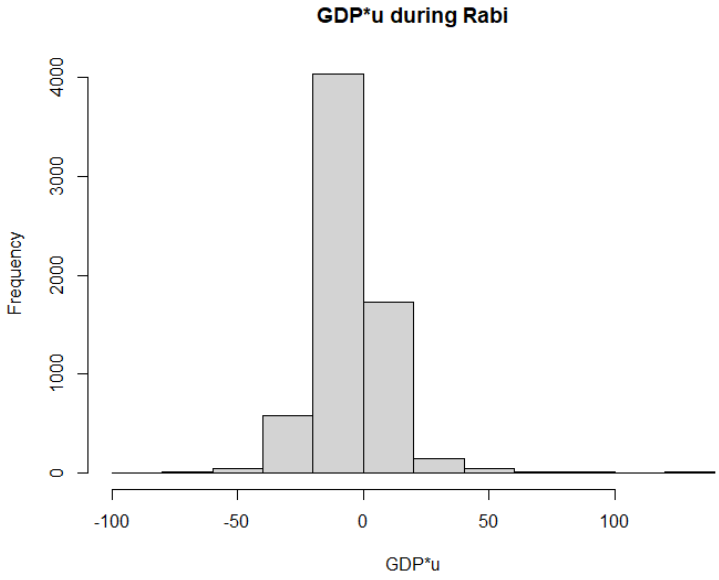

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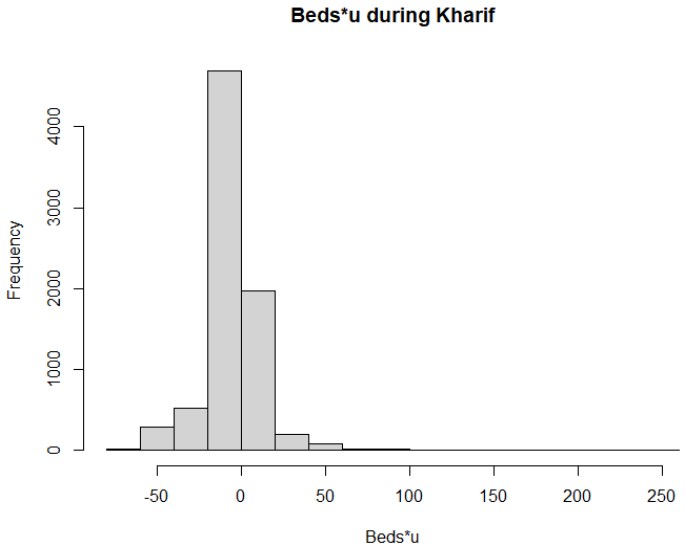

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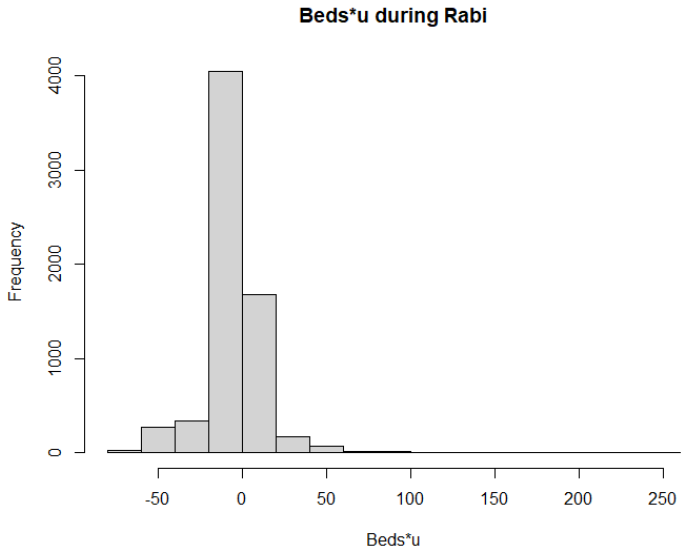

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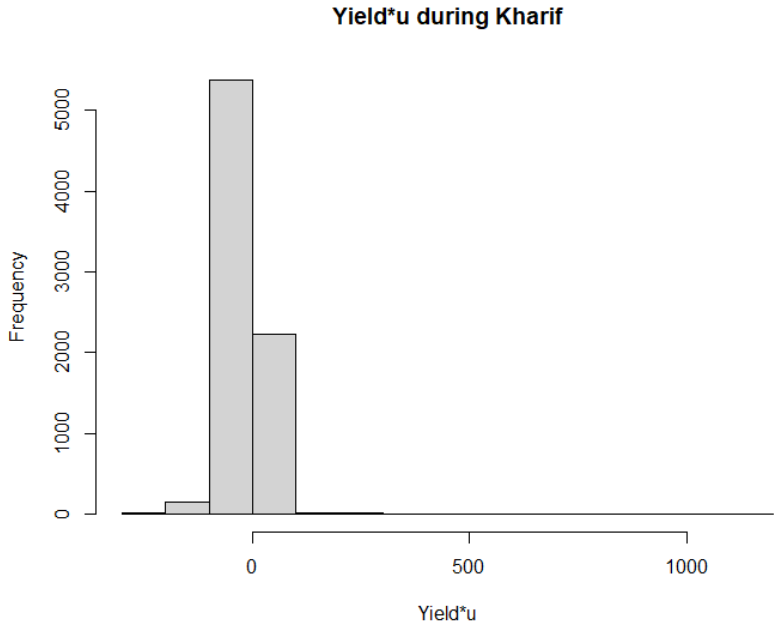

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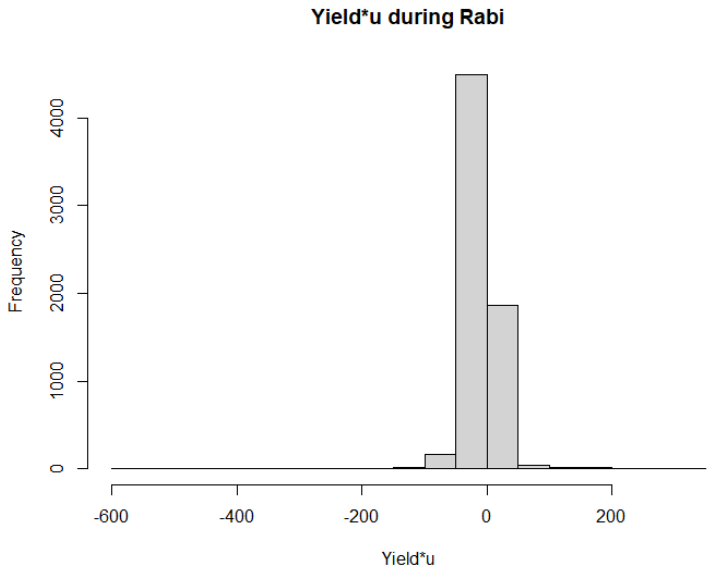

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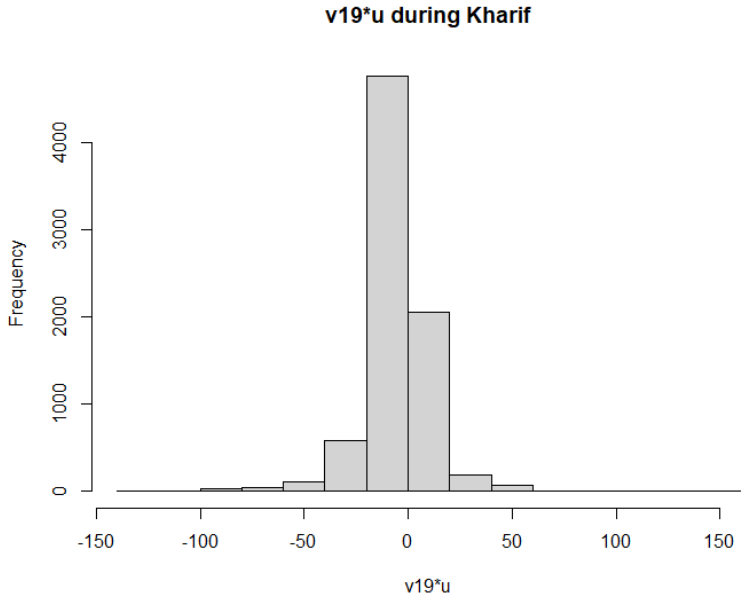

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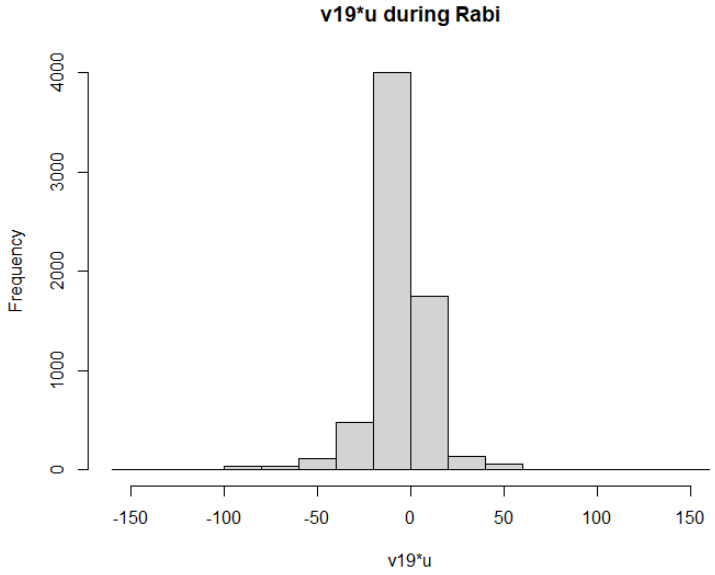

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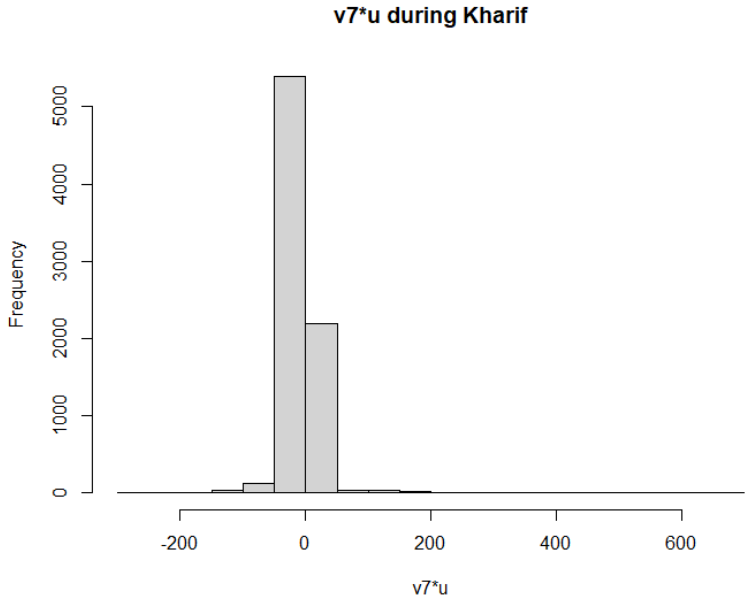

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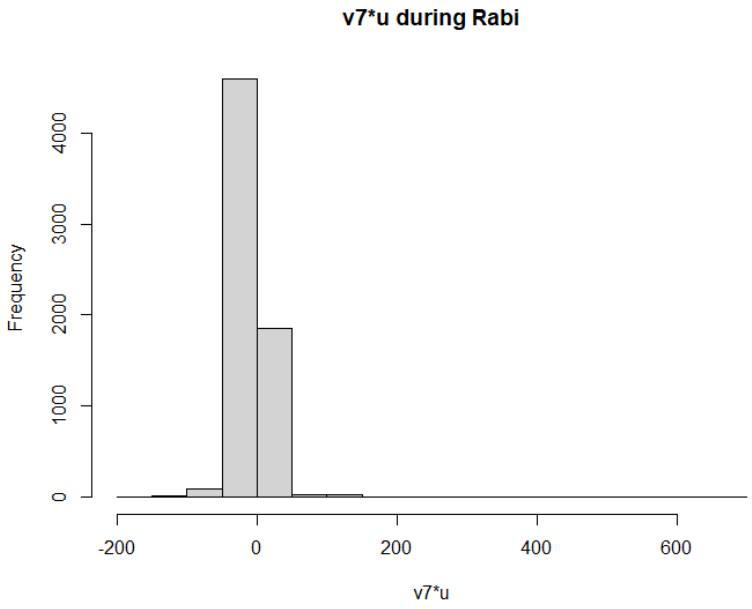

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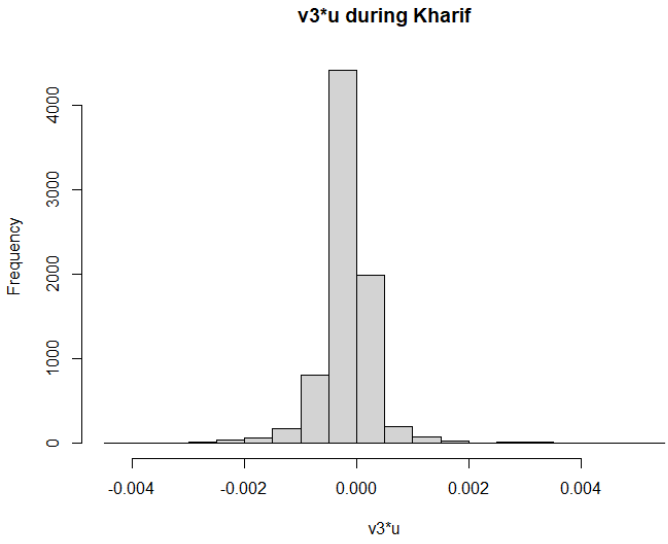

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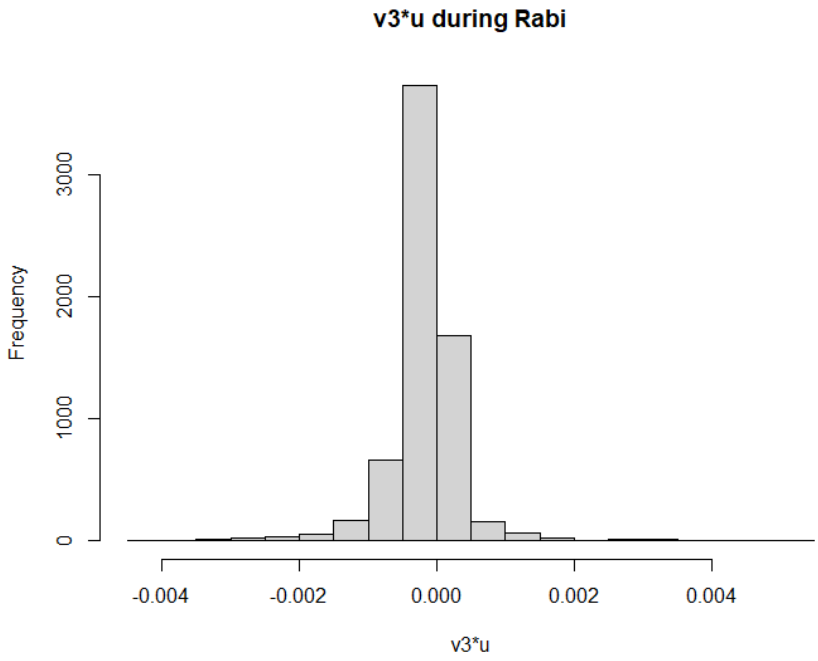

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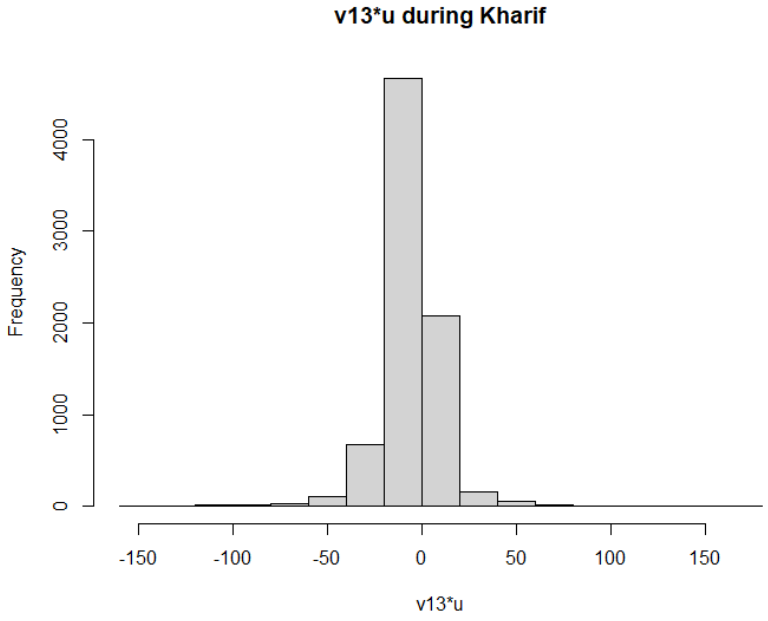

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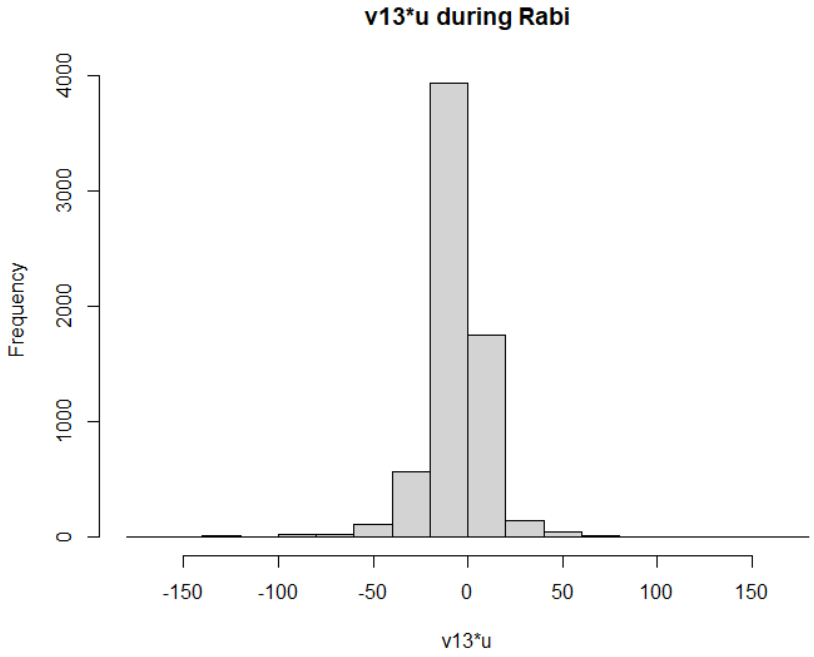

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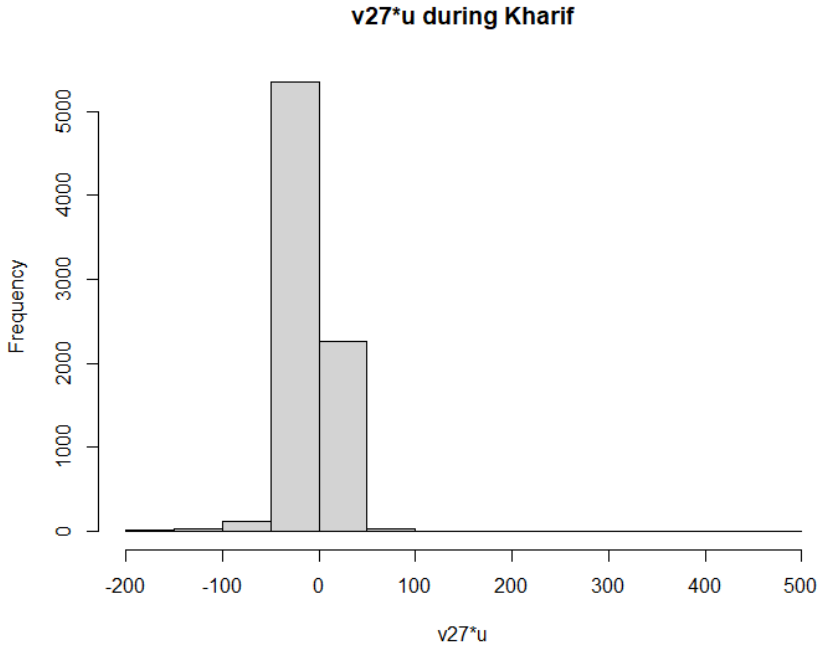

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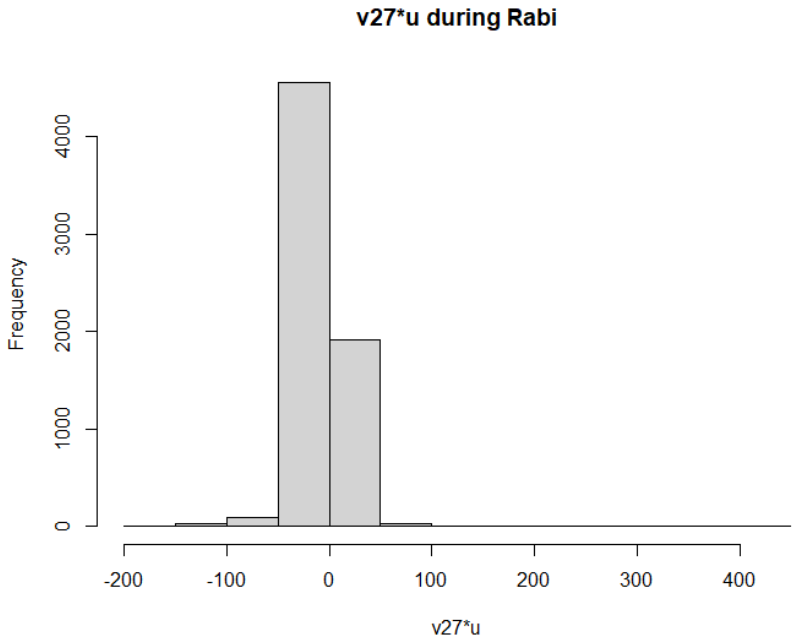


Summation != 0

Ans2.

a.

Intercept(β_0)	10.21310
Coefficient of Yield Index (β_1)	0.11642

b.

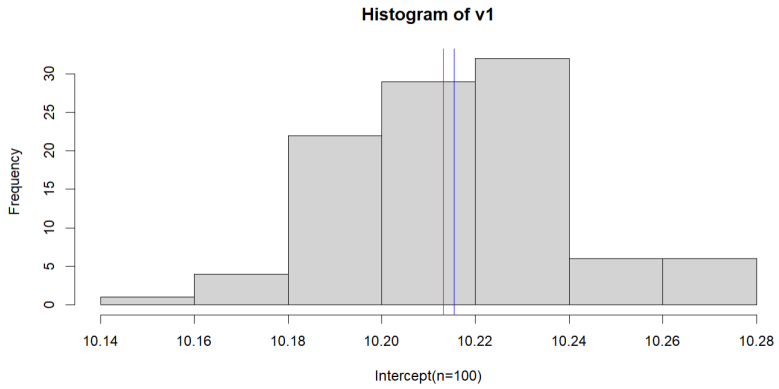
n	Intercept , Difference from True Value	Coefficient of Yield Index , Difference from True Value
100	10.21544 , -0.002344804	0.1157436 , 0.0006723552
500	10.21365 , -0.0005534522	0.1165087 , -9.279274e-05
10000	10.21318 , -8.579709e-05	0.1164266 , -1.068727e-05

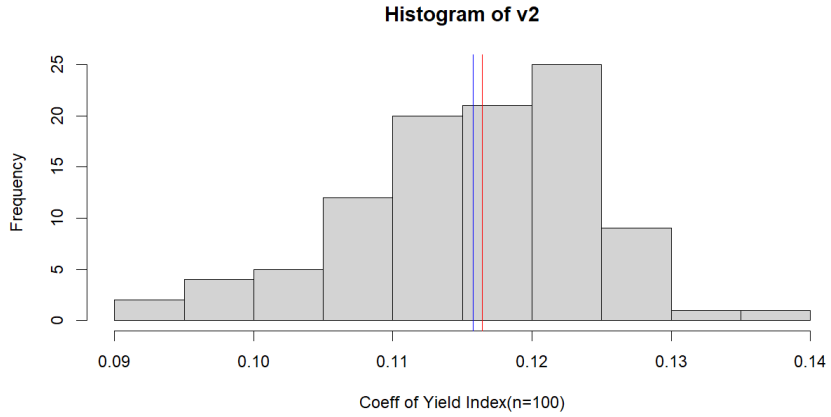
RED - True value

BLUE - Average calculated value for a random subset of the entire sample

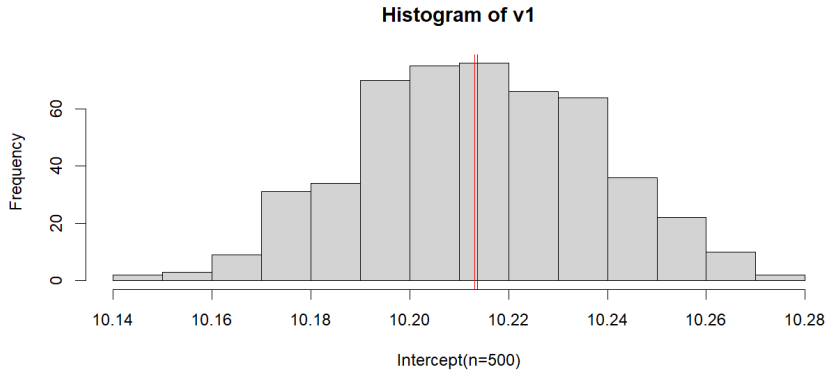
m=80

n=100

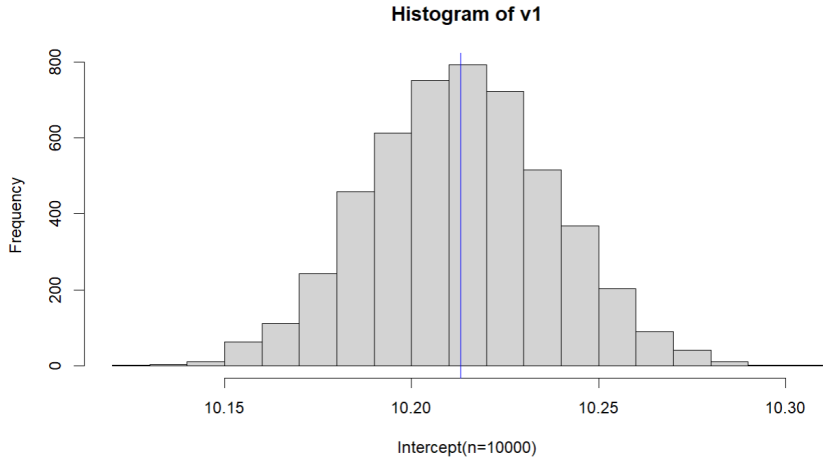


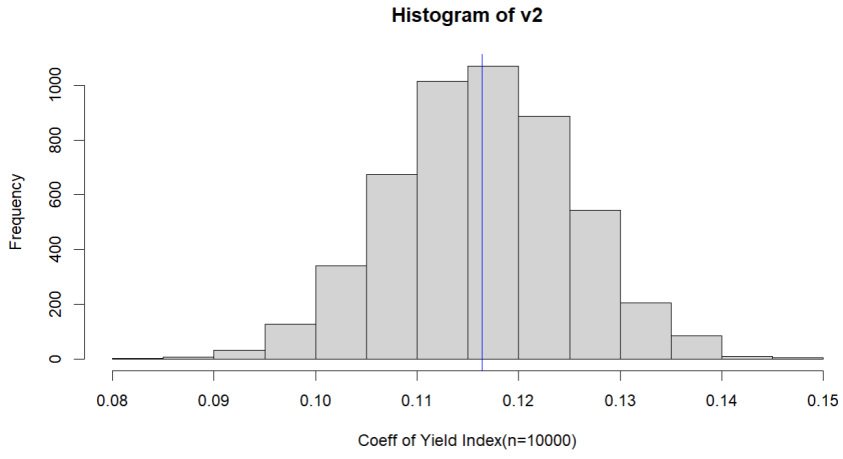


n=500



n=10000





It can be seen from the graphs that as we increase the number of iterations, blue and red line sget closer, i.e. we get closer to the true values of the estimates

Q3)

Ans 1) We have considered the models concerned with the data from commercial crops category for both Kharif & Rabi seasons. Dummy variables as mentioned have also been created as ***lm_x_kc*** and ***lm_x_rc*** where ***x = n (north zone), s (south zone), e (east zone), w (west zone), c (central zone), ne (north-east zone)*.**

2) From the model summaries of ***lm_x_kc*** and ***lm_x_rc***, we can state that the coefficients of the dummy variables are significantly different from zero in all cases. Therefore we **reject the null hypothesis that there is no structural break across different state groups**.