IDS Assignment-1

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SUMMARY STATISTICS

AGRICULTURE

Rice Production in Karnataka

State: Karnataka

Districts: Dharwad and Koppal

Crop: Rice

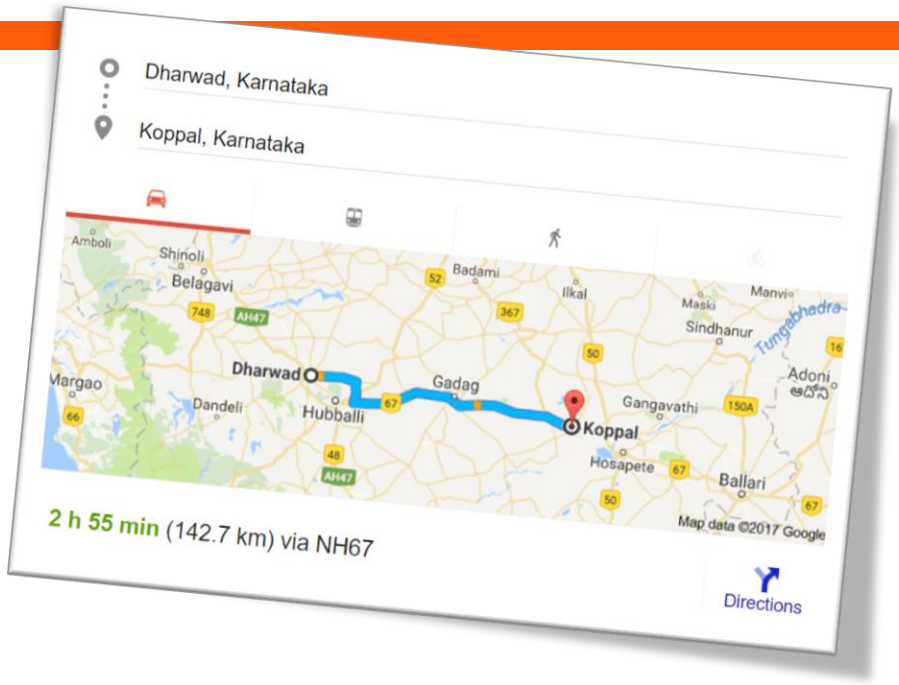
Summary Statistics

The following report is the summary statistics on the production of rice in the two districts mentioned.

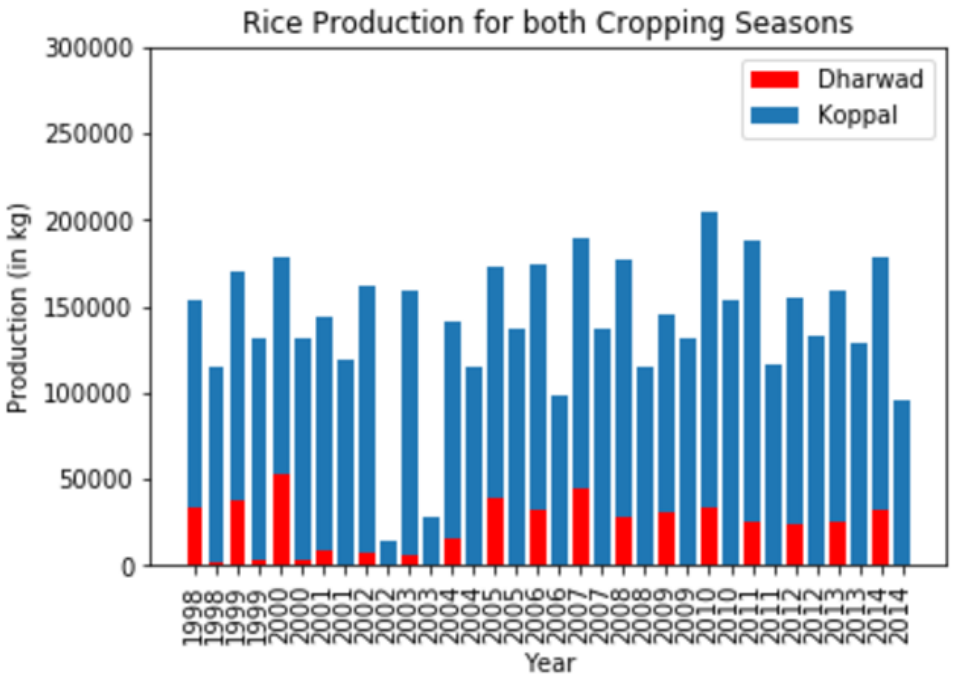
All the data referred are taken from www.data.gov.in

The python code used is enclosed within the zip file separately.

Dharwad and Koppal are located relatively towards the north-west of Karnataka, with a distance of 143km between them.



Now we look into the yield for the time period between 1997-2013



From the above graph it is very evident that Koppal surmounts Dharwad in rice production. The margin of difference in production is very high. For example, in 2013 alone the production of rice in Koppal is almost 4 times that of Dharwad's. Even though these two districts are just about a 100km from each other, the production difference is quite vast. We justify this difference with further analysis.

Box and Whisker Plot

Dharwad shows a right skewed distribution
while Koppal shows a left skewed distribution.

```
No. of years:(Sample size)  17.0
----Dharwad Rice Production----
Min production : 301.0  kg
Max production :  53225.0  kg
Mean production: 14561.755588235294  kg
Median production: 4588.5  kg
Quartiles : [   301.        854.       4588.5     29914.1075]
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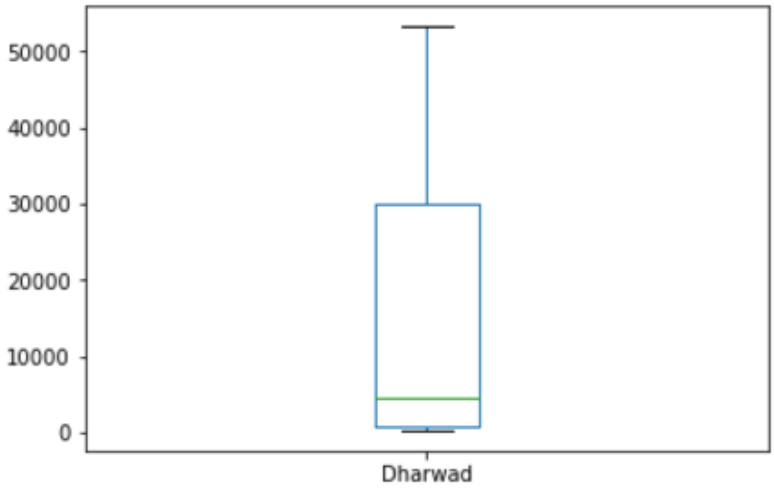


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----Koppal Rice Production----
Min production : 13687.0  kg
Max production :  170981.0  kg
Mean production: 125234.80764705883  kg
Median production: 130976.0  kg
Quartiles : [  13687.    115910.75  130976.    140322.5 ]
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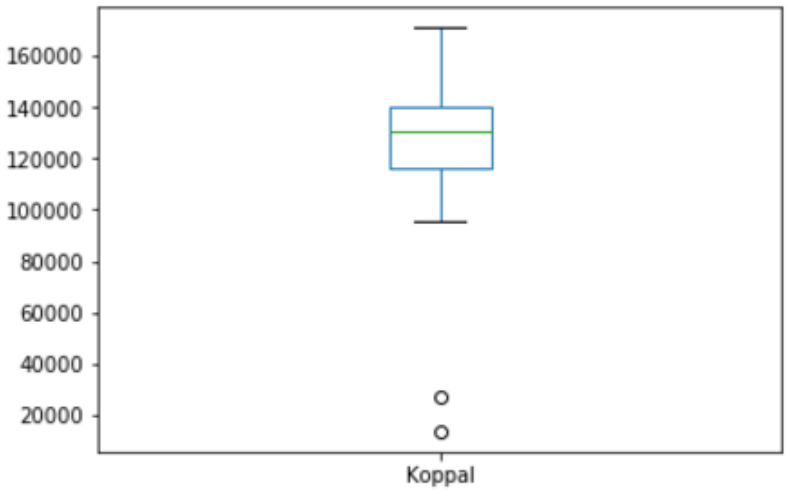
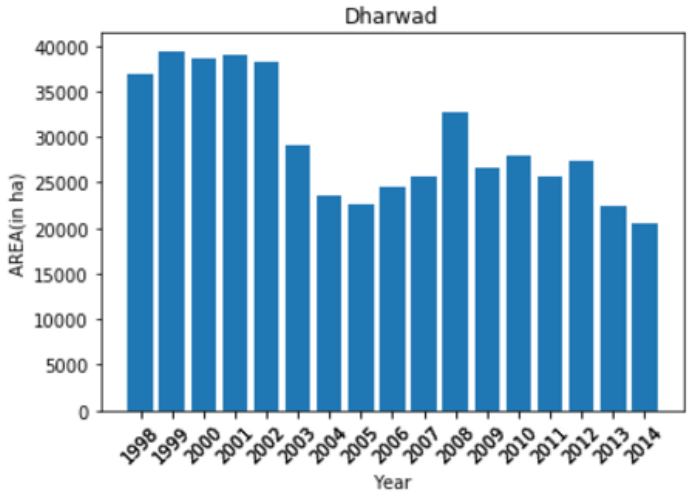
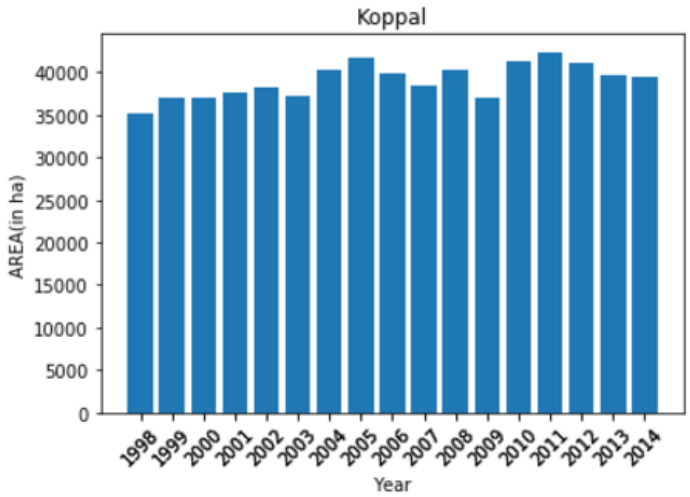


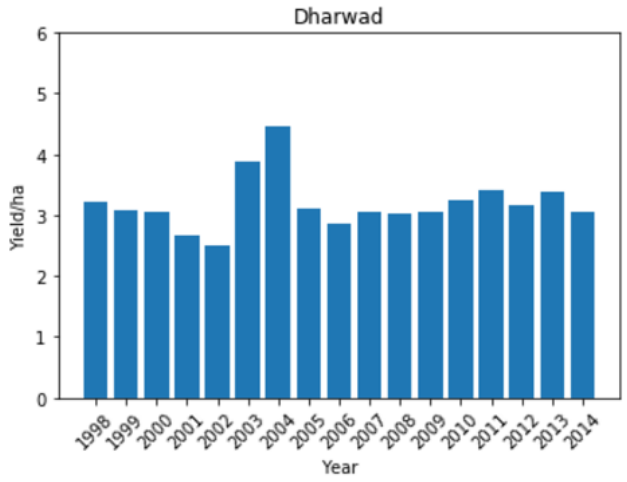
Area under cultivation

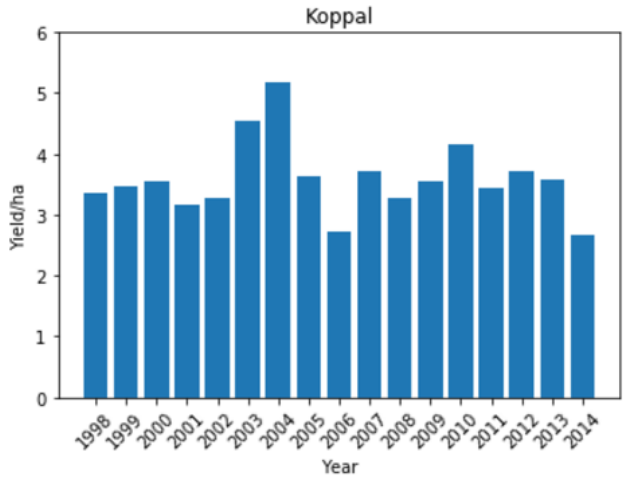
There's quite a bit of variation seen in the area put under cultivation over the years. We see that from 1998 to 2002 the area under rice cultivation is higher in Dharwad but the rice produced was still higher in Koppal. In later years the land under cultivation increased in Koppal and decreased in Dharwad, due to lower yield rates in Dharwad it was economical to do so.

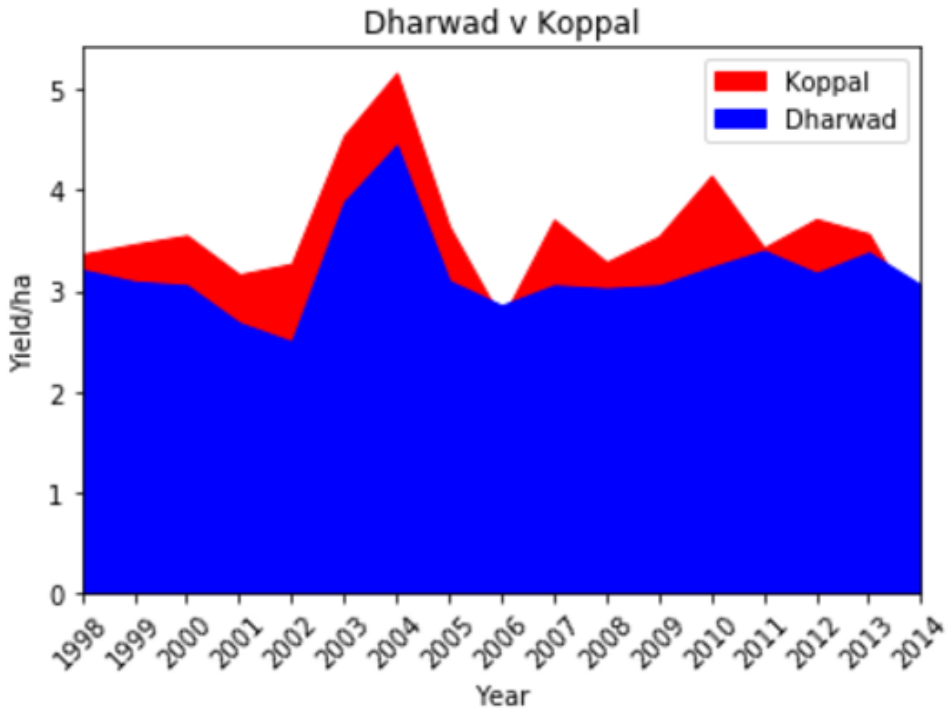




Even though the yield in Koppal is higher than that of Dharwad, the difference in yield per hectare is significantly lesser, which is easily interpreted from the below graph.



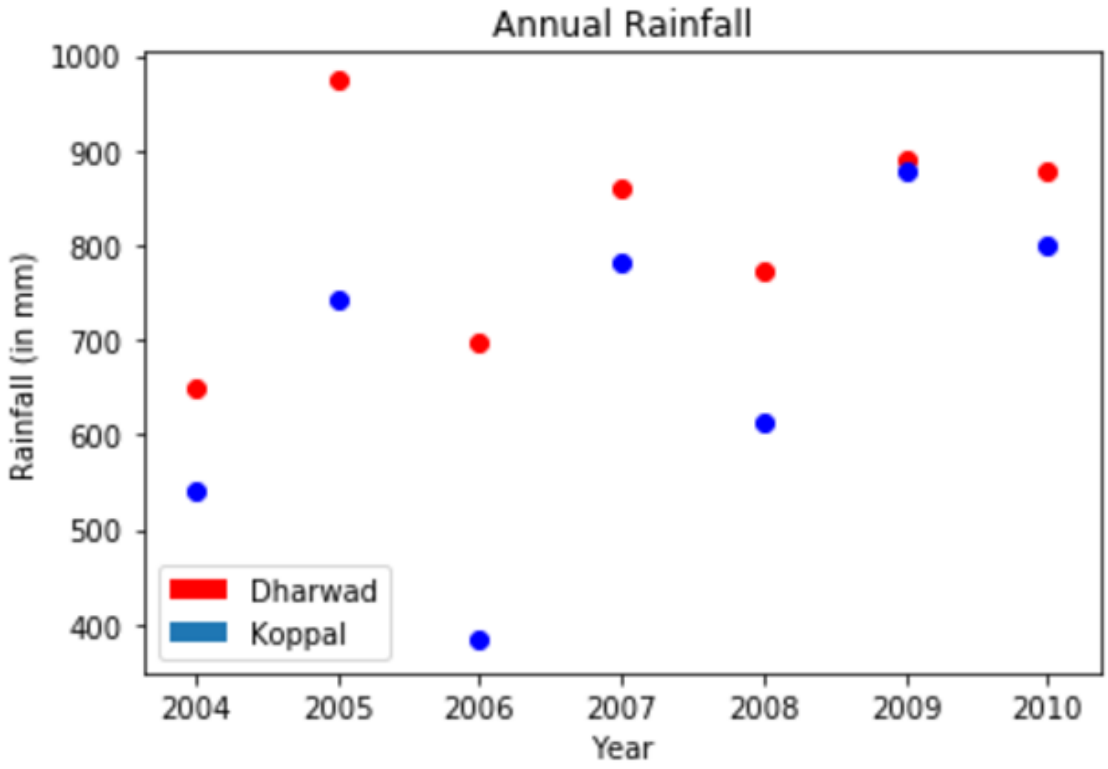




The production density (Yield/hectare) difference is not that drastic. Hence, even though Dharwad has lesser yield, the yield per area is good.

Annual Rainfall and Soil

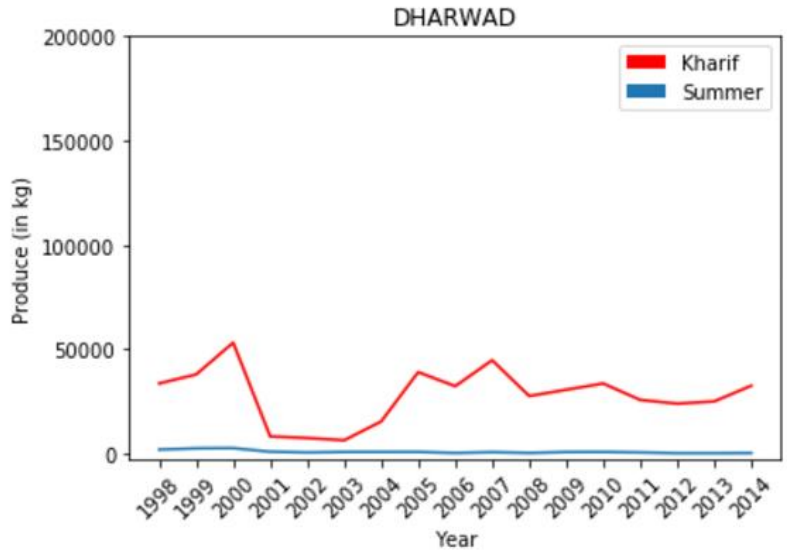
The Rainfall a place receives is very crucial for higher yield, especially for rice, which is a Kharif crop and requires 175-300cm of rainfall for high yield or at least minimal amount of 115cm for nominal yeild. The alluvial soils are best suited for the growth of rice. However, both these areas are rich with black soil which is good in water retention, but isn't as rich as the alluvial. On recording the annual rainfall in both the districts we get the following result.

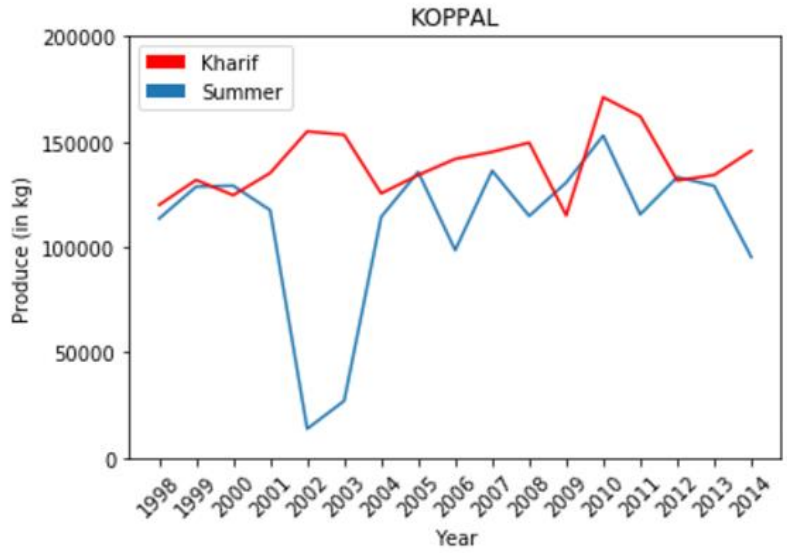


When the annual rainfall is recorded, a peculiar observation is noted. Dharwad receives more amount of rainfall that Koppal. This being due to the fact Dharwad is closer to the coast. In addition, the amount of rainfall received in general is low when compared nationally. Other regions in India having higher levels of rainfall and having suitable soils are most suited for rice production. Hence, Karnataka struggles to even make it to the list of top 10 producers of rice in India.

All the above data takes into consideration the average yield annually, but since there is predominantly two cropping seasons Kharif and Summer(Rabi). Hence we see an inconsistency in the yield in a year.

The graphs show the yield during the two periods, Summer followed by Kharif.





Due to irrigation facilities also due to the high water retention of the black soil prevalent, the difference in yield is minimised. However, around 2002 there's a huge dip in production during summer due to droughts that prevailed then, which was followed by the monsoons during Kharif, which increased the yield. Dharwad face harsher summers with minimal yield.

CONCLUSION

AS OF 2017 KARNATAKA IS THE 10TH LARGEST PRODUCER OF RICE, 39.55 LAKH TONS ANNUALY; WHICH ACCOUNTS FOR 3% OF THE TOTAL PRODUCED IN INDIA.

OUR NEIGHBOURING STATES OF TAMIL NADU AND ANDHRA PRADESH HAVE PRODUCTION VALUES OF 74 AND 128 LAKH TONS RESPECTIVEY.

THE HIGHEST PRODUCER IS WEST BENGAL, WHICH TAKES FULL ADVANTAGE OF THE SUNDARBANS, WHICH IS THE BEST PLACE FOR RICE PRODUCTION, MEETING ALL ITS REQUIREMENTS.

KOPPAL IS ONE OF THE LARGEST PRODUCER IN KARNATAKA. DHARWAD IS HOWEVER ONE OF THE LOWEST PODUCERS. BOTH THESE DISTRICTS SHARE THE SAME TYPE OF SOIL AND TEMPERATURE. ALTHOUGHT DHARWAD HAS BETTER RAINFALL THE AREA UNDER CULTIVATION IS HIGHER IN KOPPAL WITH A BETTER YEILD PER UNIT AREA AS WELL.
AND OF LATE THERE HAVE BEEN GOVERNMENT EFFORTS TO LAUNCH A RICE TECHNOLOGY PARK IN KOPPAL TO INCREASE YIELD WITH THE ASSISTANCE OF LATEST TECHNOLOGY.