Report Week – 17th July 2020

Task Performed:

- Worked on Probability Density Function of Edge Homogeneity on the Different Time periods
- LSTM model on the different time periods

We divide the Entire data in to 14 different periods , we can see in the Table 1 with the time periods and its dates and number of samples(comments) in the each time periods

TimePeriod	Number of Samples	StartDate	EndDate
T1	3367	16th Nov 2015	24th June 2016
T2	6265	25th June 2016	13th July 2016
T3	3084	14th July 2016	7th Dec 2016
T4	1466	8th Dec 2017	26th Jan 2017
T5	2300	27th Jan 2017	29th Mar 2017
T6	4102	30th Mar 2017	19th June 2017
T7	54505	20th June 2017	08th July 2018
T8	23067	9th July 2018	21st Sep 2018
T9	15385	22nd Sept 2018	15th Nov 2018
T10	3718	16th Nov 2018	25th Nov 2018
T11	25468	26th Nov 2018	15th Jan 2019
T12	54850	16th Jan 2019	14th Mar 2019
T13	9119	15th Mar 2019	21st Mar 2019
T14	13414	22nd Mar 2019	29th Mar 2019

Table 1 – Time distributed periods

According to this table 1 we perform the edge homogeneity visualization on each time periods and check the behaviors between the nodes.

As earlier we already know in Case 1 which consist of all the source node which we see which Target nodes are attracted by the source node in this Case 1 and In Case2, we see which Source node is attracted towards the Target nodes and interpret the results

We already combined the Case1's three different scenarios and Case2's three different scenarios to get the comparison better in this cases.

EdgeHomogeneity of TimePeriod1 with Case1 and Case2 is in Figure 1

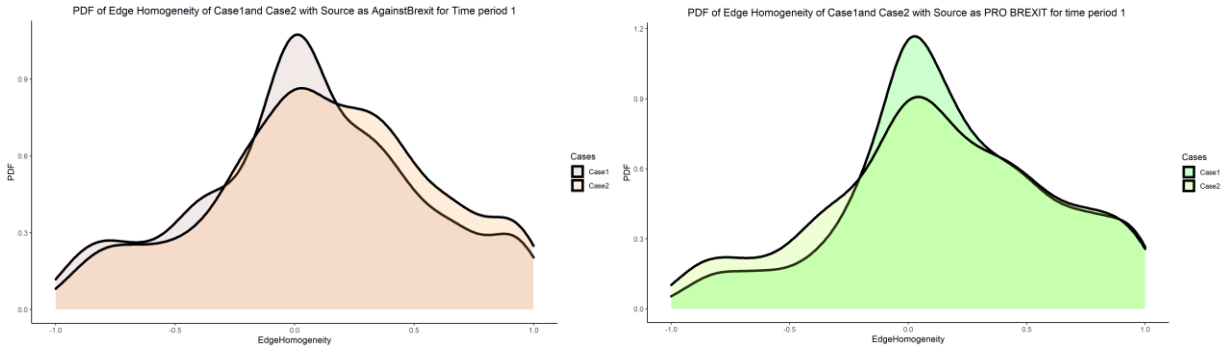


Figure 1 – PDF of Edge Homogeneity of T1

- From Figure1 we can see the Against Brexit nodes are engaged in the Against Brexit stances more and also they also discuss with the other stances nodes.
- Though the Pro Brexit stance nodes are more attracted to opposite stance nodes in this time period

EdgeHomogeneity of TimePeriod2 with Case1 and Case2 is in Figure 2

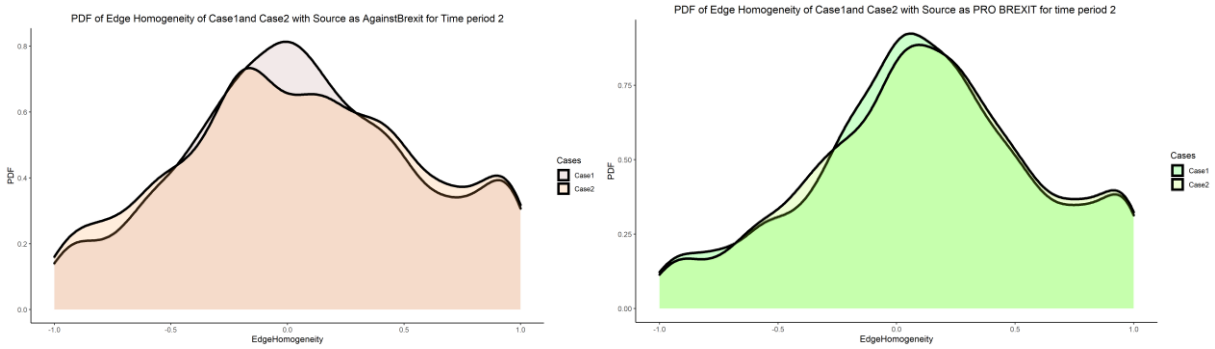
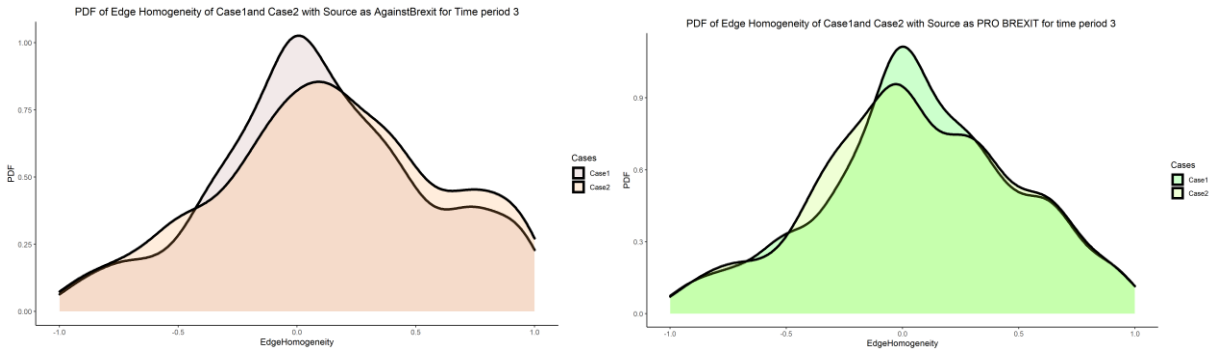


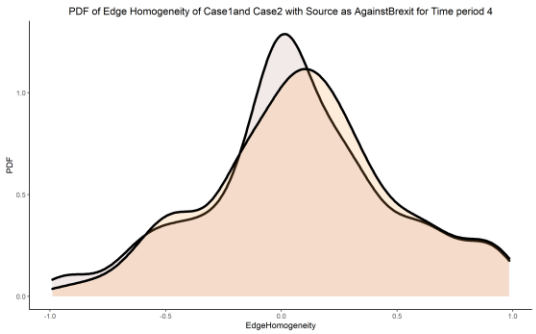
Figure 2 – PDF of Edge Homogeneity of T2

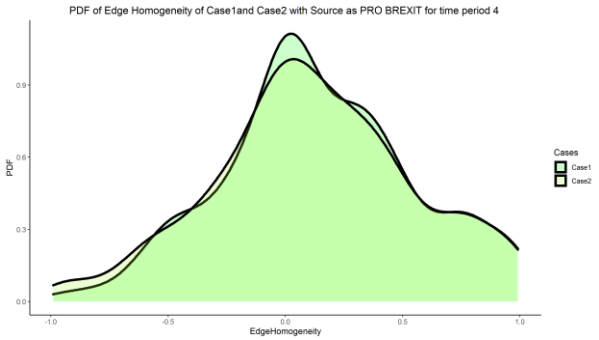
- From Figure 2 we can see that Against Brexit nodes are engaged more in against Brexit stances nodes where as for ProBrexit nodes are engaged in discussion with the opposite stance nodes.

EdgeHomogeneity of TimePeriod3 with Case1 and Case2 is in Figure 3

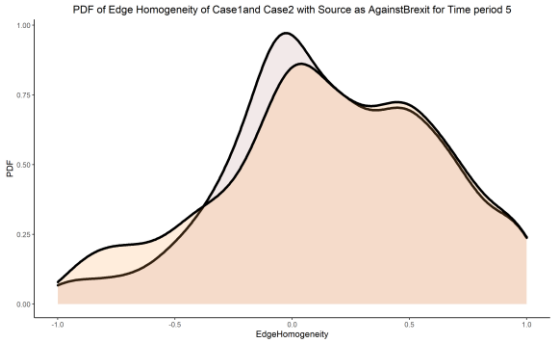


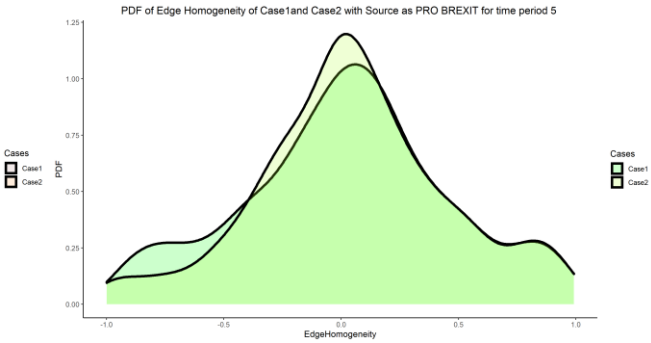
EdgeHomogeneity of TimePeriod4 with Case1 and Case2 is in Figure 4



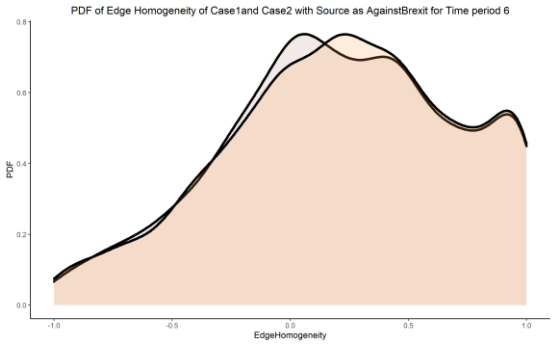


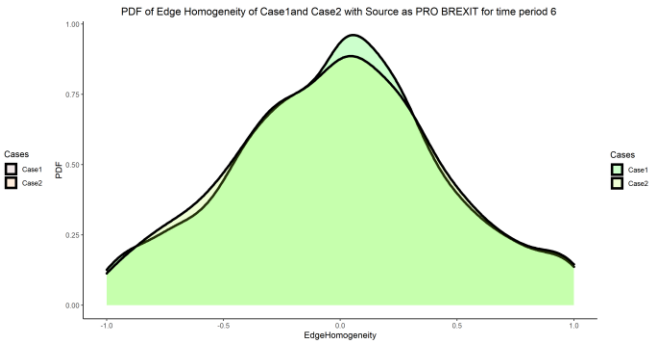
EdgeHomogeneity of TimePeriod5 with Case1 and Case2 is in Figure 5



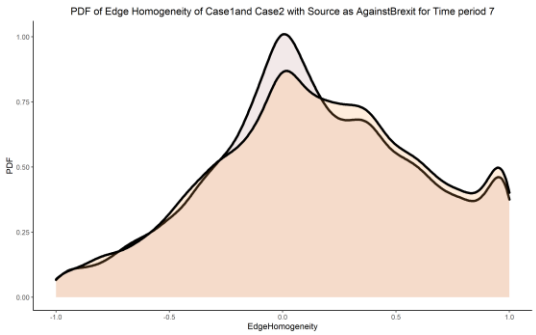


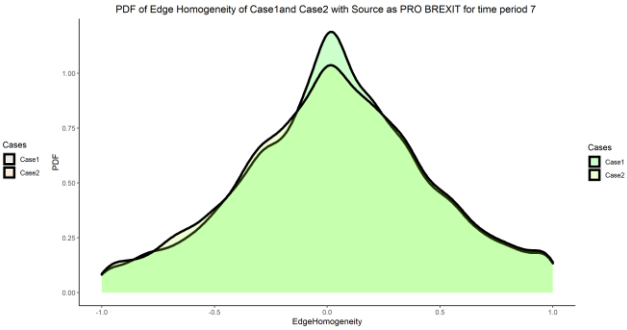
EdgeHomogeneity of TimePeriod6 with Case1 and Case2 is in Figure 6



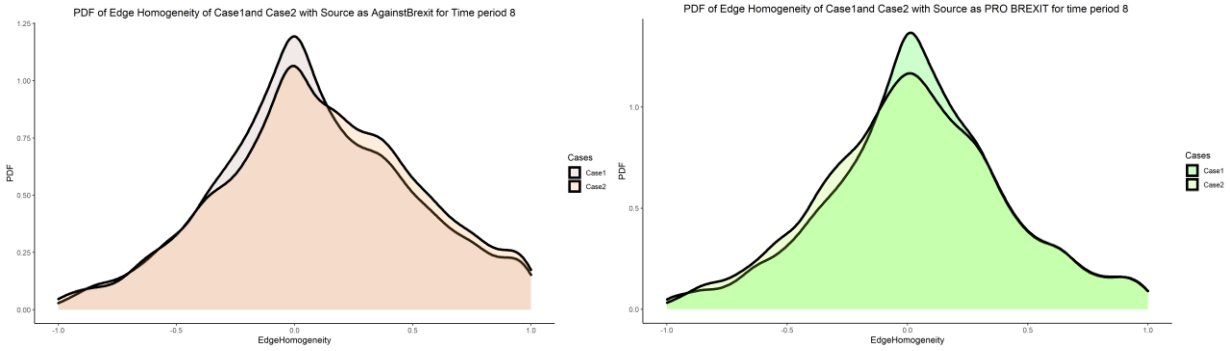


EdgeHomogeneity of TimePeriod7 with Case1 and Case2 is in Figure 7

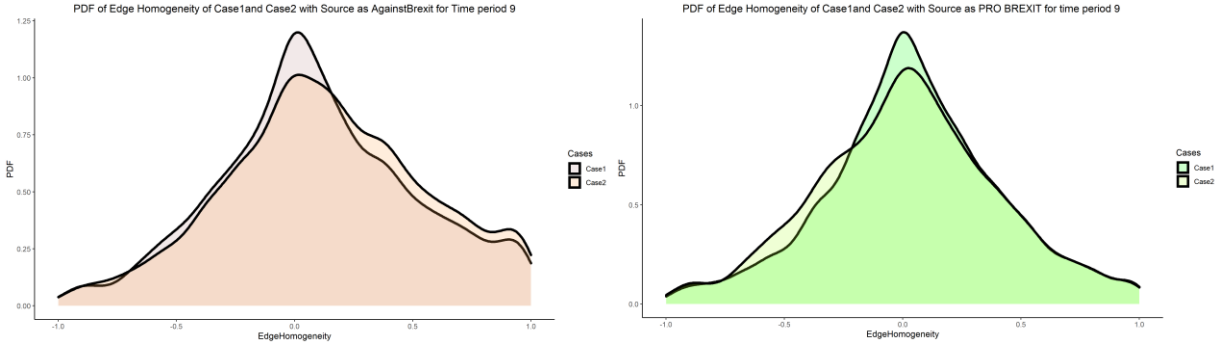




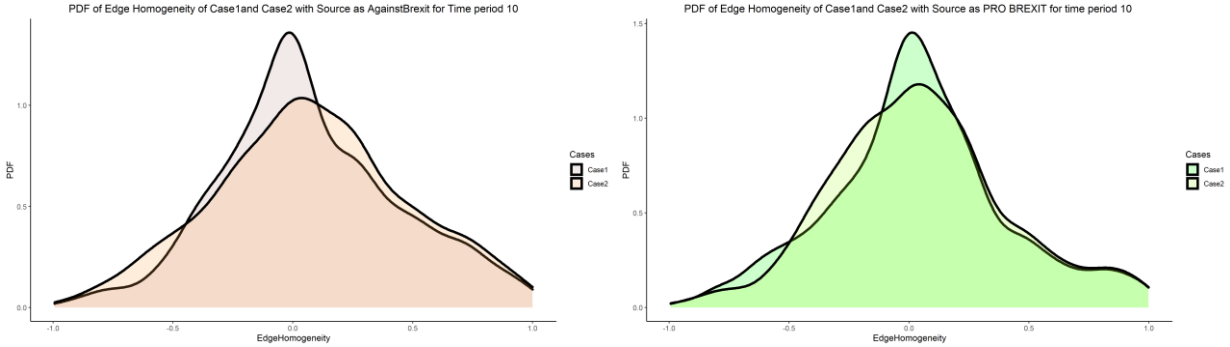
EdgeHomogeneity of TimePeriod8 with Case1 and Case2 is in Figure 8



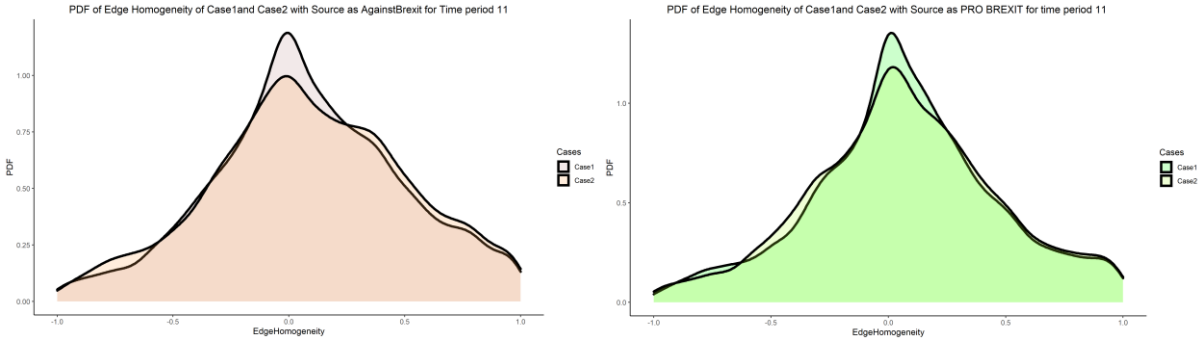
EdgeHomogeneity of TimePeriod9 with Case1 and Case2 is in Figure 9



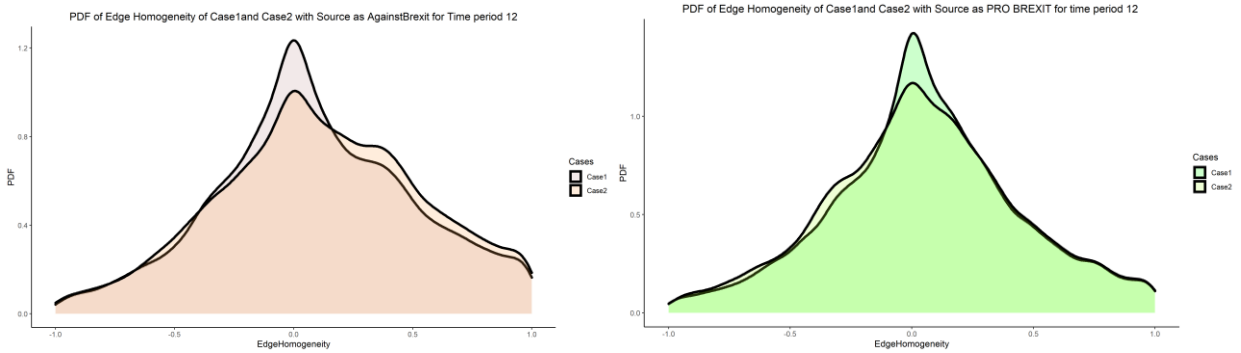
EdgeHomogeneity of TimePeriod10 with Case1 and Case2 is in Figure 10



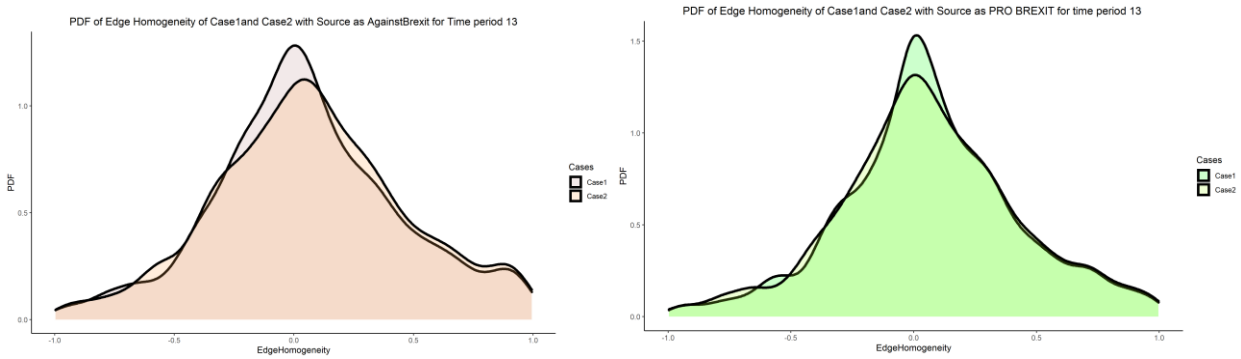
EdgeHomogeneity of TimePeriod11 with Case1 and Case2 is in Figure 11



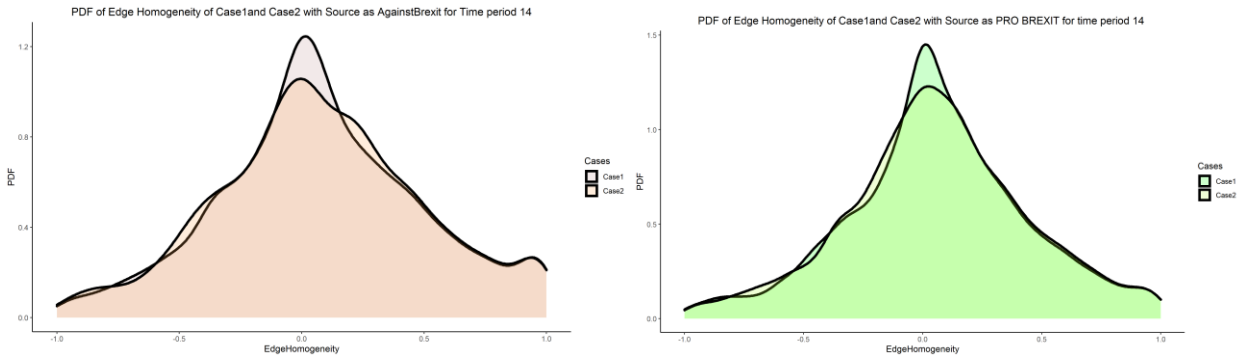
EdgeHomogeneity of TimePeriod12 with Case1 and Case2 is in Figure 12



EdgeHomogeneity of TimePeriod13 with Case1 and Case2 is in Figure 13



EdgeHomogeneity of TimePeriod14 with Case1 and Case2 is in Figure 14



All the periods follow the same pattern of the plots in different time patterns. From table 1 we can see the number of the comments are more in T7, T11 and T12 periods. We can see mentioned time periods Against Brexit Stance nodes are engaging in discussion to the Against Brexit Stance node. Whereas in Probrexit stance nodes are attracted to the other stance nodes . From the figures we can see the number of source node are attracted to the target node and also we see which target node stance are attracted by the source node.

From the LSTM model applied on the different time periods we can see the results in table below with Performance measures as F1 – Score, Accuracy, Recall and precision. As the data imbalance we can see the high accuracy in the results. From the table

TimePeriod	Number of Samples	StartDate	EndDate	Accuracy	F1 Score	Recall	Precision
T1	3367	16th Nov 2015	24th June 2016	**0.46**	**0.21**	**0.33**	**0.15**
T2	6265	25th June 2016	13th July 2016	**0.34**	**0.17**	**0.33**	**0.11**
T3	3084	14th July 2016	7th Dec 2016	**0.43**	**0.2**	**0.33**	**0.14**
T4	1466	8th Dec 2017	26th Jan 2017	**0.34**	**0.27**	**0.34**	**0.23**
T5	2300	27th Jan 2017	29th Mar 2017	**0.45**	**0.21**	**0.33**	**0.15**
T6	4102	30th Mar 2017	19th June 2017	**0.35**	**0.26**	**0.32**	**0.15**
T7	54505	20th June 2017	08th July 2018	**0.34**	**0.17**	**0.33**	**0.11**
T8	23067	9th July 2018	21st Sep 2018	**0.45**	**0.21**	**0.33**	**0.15**
T9	15385	22nd Sept 2018	15th Nov 2018	**0.44**	**0.2**	**0.33**	**0.15**
T10	3718	16th Nov 2018	25th Nov 2018	**0.49**	**0.22**	**0.33**	**0.16**
T11	25468	26th Nov 2018	15th Jan 2019	**0.44**	**0.2**	**0.33**	**0.15**
T12	54850	16th Jan 2019	14th Mar 2019	**0.44**	**0.21**	**0.33**	**0.16**
T13	9119	15th Mar 2019	21st Mar 2019	**0.49**	**0.22**	**0.33**	**0.16**
T14	13414	22nd Mar 2019	29th Mar 2019	**0.44**	**0.21**	**0.33**	**0.15**