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Covid-19 Lockdown Impact on Commodity Prices

Project Assignment

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1. Answer 1
   For web-scraping above data and consolidating it is a cleaned format for the months of February, March and April 2020, refer to following python scripts-
   1. prices.py (scrapy run spider here)
   2. crawllerrun.py (execution of prices.py and data cleaning)
   3. Final Output file - cleaned_output_panel_data_4.csv

2. Answer 2 and 3

Table1: Summary statistics of all the data points from all cities

Overall Summary				
Type of Goods	Commodities	No. of Observation	Mean	Standard Deviation
Non-Perishable Goods	Rice	8237	33.59	7.94
	Wheat	7633	28.87	6.73
	Atta (Wheat)	8231	30.50	5.82
	Gram Dal	8167	66.64	8.45
	Tur/Arhar Dal	8103	89.91	9.84
	Urad Dal	8180	100.26	17.46
	Moong Dal	8226	101.65	15.04
	Masoor Dal	8207	69.47	9.79
	Sugar	8218	39.47	2.91
	Groundnut Oil (Packed)	6186	139.64	20.81
	Mustard Oil (Packed)	7971	117.40	16.74
	Vanaspati (Packed)	8133	88.87	14.67
	Soya Oil (Packed)	5909	99.51	11.80
	Sunflower Oil (Packed)	7497	107.71	13.46
	Palm Oil (Packed)	6587	88.90	11.26
	Gur	8115	46.25	9.93
	Tea Loose	8086	217.47	47.38
	Salt Pack (Iodised)	8210	15.92	3.88
Perishable Goods	Milk @	8160	45.84	6.66
	Potato	8218	24.37	6.88
	Onion	8217	32.62	10.74
	Tomato	8149	22.00	10.05

Table2: Summary statistics of data pre and post covid-19 lockdown on 24 March 2020.

		Pre-Lockdown			Post - Lockdown		
Type of Goods	Commodities	No. of Observation	Mean	Standard Deviation	No. of Observation	Mean	Standard Deviation
Non-Perishable Goods	Rice	4613	33.27	7.99	3624	33.98	7.86
	Wheat	4287	28.72	6.70	3346	29.06	6.75
	Atta (Wheat)	4605	30.06	5.78	3626	31.07	5.82
	Gram Dal	4598	65.22	7.82	3569	68.48	8.87
	Tur/Arhar Dal	4548	86.97	8.27	3555	93.68	10.39
	Urad Dal	4593	97.89	17.74	3587	103.30	16.62
	Moong Dal	4603	97.02	12.42	3623	107.53	15.99
	Masoor Dal	4602	67.17	8.72	3605	72.40	10.27
	Sugar	4603	39.09	2.95	3615	39.96	2.79
	Groundnut Oil (Packed)	3483	137.00	20.65	2703	143.05	20.51
	Mustard Oil (Packed)	4485	117.10	16.64	3486	117.78	16.86
	Vanaspati (Packed)	4556	88.23	14.96	3577	89.68	14.26
	Soya Oil (Packed)	3265	98.49	11.83	2644	100.77	11.65
	Sunflower Oil (Packed)	4225	106.54	13.38	3272	109.23	13.41
	Palm Oil (Packed)	3669	88.85	12.00	2918	88.96	10.25
	Gur	4567	45.77	9.37	3548	46.88	10.57
	Tea Loose	4540	216.52	44.80	3546	218.68	50.47
	Salt Pack (Iodised)	4600	15.80	3.80	3610	16.08	3.97
Perishable Goods	Milk @	4569	45.52	6.49	3591	46.23	6.86
	Potato	4600	23.17	6.58	3618	25.90	6.94
	Onion	4599	36.32	11.71	3618	27.92	6.95
	Tomato	4591	21.93	10.32	3558	22.10	9.69

I am not very clear about Dependent and independent variable for this regression analysis. For each commodity if I have price data and dummy variable with value 0 for pre-lockdown periods and value 1 for post lockdown periods. Still for regression analysis should I assume lockdown dummy as independent variable to see its impact on prices of each commodity. Although I am able to recall something line RDD design or regression where treatment and control groups are handled but its idea is still a bit hazy. I have studies average movement of prices pre and post lockdown.

*** For more summary statics refer to excel analysis.xlsx file present in the folder shared on email.

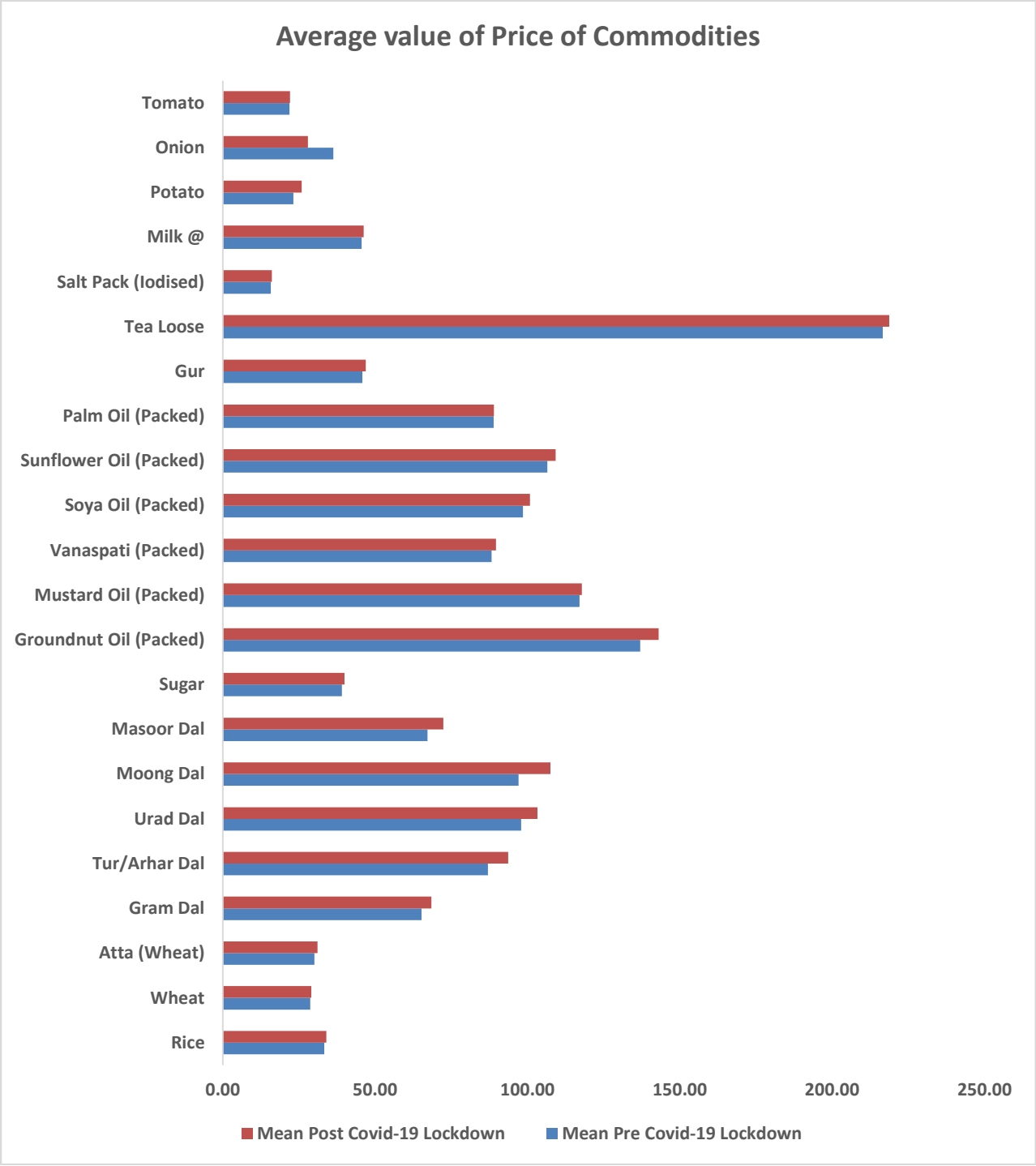

Chart 1 : Comparison of average price of each commodity pre and psot covid lockdown

As it can be seen from the above plot that average prices for all the commodities after covid-19 lockdown has been higher than pre-lockdown period. It is also interesting to observe that Onion prices has gone down after covid. Chart 2 looks at the variation of onion prices across each centre.

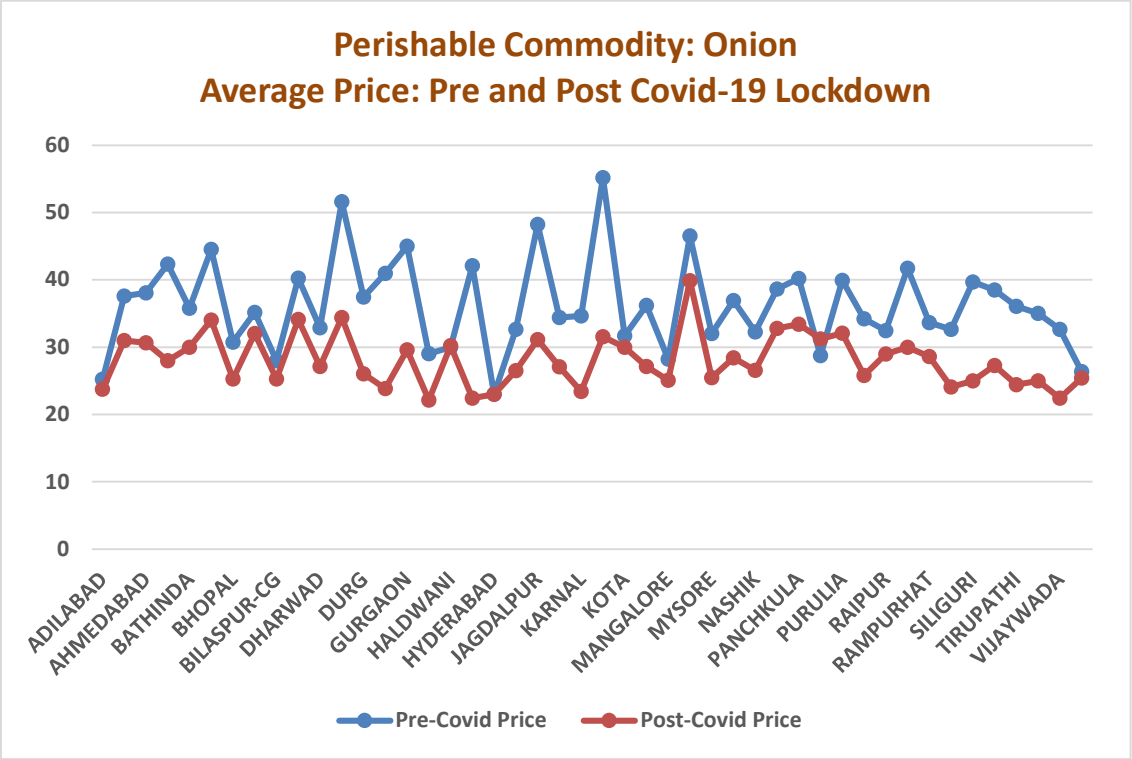

Chart 2: Average Price movement across each Centre

Looking at the Chart 2, average Onion prices has been lower post lockdown at each observation Centre across India. This trend has been observed for only single commodity. Which raises a question to deep dive into the reasoning behind this peculiar behavior.

Factors that can be considered for future research are-

1. Crop cycle of onion and other commodities included in the study
2. Import of onion at after and before lockdown
3. Government policy update related to onion prices in the market

*** To look at the commodity specific variation similar to Chart2 refer to Output3 tab in excel analysis.xlsx file.

3. Answer 4

Perishable Goods are those commodities which have very low shelf value and they need proper cool storage for longer duration. While Non-Perishable goods can be stored for longer period. All though they need extra care in term of pest prevention.

Perishable Goods: Milk @, Potato, Onion, Tomato

Non-Perishable Goods: Rice, Wheat, Atta (Wheat), Gram Dal, Tur/Arhar Dal, Urad Dal, Moong Dal, Masoor Dal, Sugar, Groundnut Oil (Packed), Mustard Oil (Packed), Vanaspati (Packed), Soya Oil (Packed), Sunflower Oil (Packed), Palm Oil (Packed), Gur, Tea Loose, Salt Pack (Iodised)

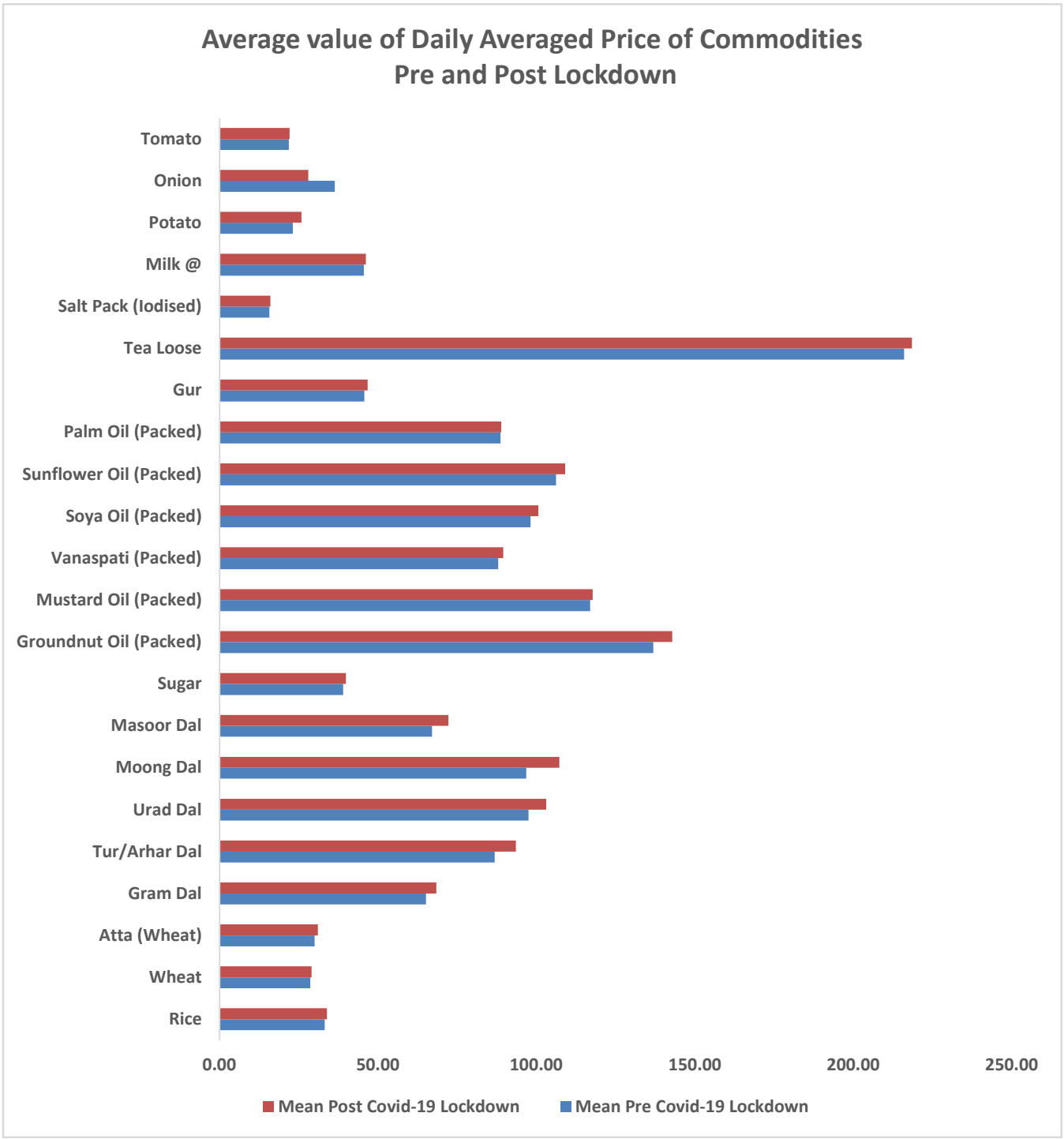

Chart 3: Average price movement pre and post covid-19

To create this chart, first daily prices were averaged across all the Centre in the data and then pre and post average value was calculated for the specified time period.

Observations:

1. There is higher variation for pulses in average value of daily averaged prices for pre and post lockdown period. This indicate that post lockdown there might have been decrease in import of these crops leading to increase in prices.
2. For food items like wheat, rice, sugar, salt, tomato and milk price variation is not vary high. This implies that there has been not much impact of covid in these commodities as they are regularly consumed food items in household. These items are basic food and increase in their price would have affected people severely during lockdown given its harsh impact on employment of seasonal worker and daily wage earners.

Further analysis of this data can be conducted based on research around this topic. Please consider this as preliminary findings from the scrapped data.

Note:

For plots of Price variation of each commodity across all the Centre present in the data, refer to Jupyter Script and Output folder.