



An Analysis of the Financial Impact of Covid-19 on the Residents of Kolkata, India

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Abstract

As the Corona virus continues to wreak havoc over the city of Kolkata and its suburbs, a rise in unemployment, loss of jobs, and financial instability instigates a fear of insufficient supply of industrially mass-produced products, and unaffordability as collateral. Must the average middle-class man now reconsider his purchase decisions? Is he successfully obtaining daily essentials and necessities for the same retail price he used to?

Keywords: Consumer price index, Corona virus, financial security, Inflation rate, Mental stress, Migrant workers, Urban economy, Working professionals.

Introduction

Overnight, the term “Corona virus” became a matter of international importance as cases began to sore and global organizations like the UN and the WHO started warning nations about the possibility of a global endemic. Even though the head scratching outbreaks of unexplained pneumonia like cases were springing up all around the world through December 2019, it was not until January that the cause was identified and named, and not until February that India was thrown into the mix. The uncontrollable exponential spread of the virus, now infamously named the Coronavirus, shortened to Covid-19 was a wreaking havoc, claiming lives with a mortality rate of 10%¹.

By June, cases in West Bengal had crossed a million and Kolkata (Table-1) was not far away from reaching that number. While the government was scrambling to come up with a plan of action to tackle this new force at loose, it cannot be argued that a complete shutdown and isolation of all systems, or a lockdown as it has been named, was necessary². Epidemiologically, the corona virus is an airborne contagious disease, that is, spread of the virus is by airborne particles and droplets, or in other words an infected individual releases respiratory fluids containing the SARS-CoV-2, also known as 2019-nCoV virus when they exhale.

A relatively low mortality rate, when compared to another member of its family, MERS-CoV (35%) was not a major concern, but its rapid spread and being an RNA virus, mutation into a different more fatal variant was a possibility³. Hence, a lockdown was essential in putting a halt to the virus’ spread till a potent controller, or vaccine, or another effective measure was achieved. But in 2023, Covid cases is almost nil till date in comparison to the previous year’s like 2020, 2021, and 2022 in the state of West Bengal.

Table-1: Average number of new corona virus cases per day in Kolkata.

New Covid Cases (approximate daily average)			
Year Month	2020	2021	2022
January	-	609	19064
February	-	133	348
March	-	251	43
April	-	6910	17
May	-	19511	14
June	8985	3268	198
July	1589	891	3067
August	3066	673	175
September	6438	743	267
October	3720	451	173
November	3053	819	9
December	2289	554	9

Of course, a complete halt of industrial activities did not come with its drawbacks⁴. Strictly speaking, salary men/women account for less than 20% of all wage earners in West Bengal, where primary occupation is agriculture, accounting for almost half of the national share of produce and textiles. A lockdown

meant that the renowned vegetables dealer who used to be a daily sell-out can now be seen sitting with a gloomy expression in a desolate marketplace, woefully waiting for someone to show up. His friend, the fishmonger cannot even make it into the city since the railway system that he commuted by is not in service⁵. Grocery stores, restricted to staying open to customers during a stipulated interval every day, duration not long enough to earn sustainable profit. With further restrictions being imposed on the number of customers to be allowed inside a store at a time, meant that their sales figures plummeted even further.

The tourism industry ceased to exist completely, almost as if vanishing into thin air⁶. The transportations service company only saw their losses starting to stack up with schools and offices, their stable source of daily passengers, shut down with no notice of reopening. Bus depots had transformed into bus graveyards. Courageous riders must choose from a scarce number of auto rickshaws, some of whom were willing to risk their lives to earn a daily wage and still hung onto hope⁷. Those who were prepared, having a motorcycle or even a bicycle was golden. For delivery persons were in urgent need. All industries combined, home delivered essentials and non-essentials were up 1.25 times.

Nevertheless, it was a miserable economic situation during the Covid-19 era for the period from 2020 to 2022 and its day-today impact on the financial security of common people in different sectors in the city of Kolkata is the primary purpose of the present study.

Financial, Mental, and Physical Status of Work-from-Home Professionals: A Survey

The pandemic paved the way for a new era of work from home salary men/women, online school⁸, home delivered food and daily essentials⁹. To help shed some light on their respective perspectives, a survey was conducted over 29 such individuals residing in the Greater Metropolitan Kolkata area.

As awareness regarding the outbreak and the causalities of the pandemic spread, so did fear among the surveyed. A few do claim to be unfazed while some others exhibit their determinations to fight against the virus in their own ways. Many neglected the idea encountering hospital staff, although they were open to the idea of having their daily essentials delivered to their doorsteps by deliverymen following proper precautions. Interestingly, with the poll essentially stuck at 50-50 over the idea of coming in contact with health workers, it is hard to ascertain a conclusion. In the case of a neighbor contracting or even succumbing to the infection, everyone was on the same page, agreeing to help them in any way possible while also maintaining a safe distance. Dissatisfaction reigned supreme inside many with more than 40% labeling the lockdown a failure. Contradictorily, 82% of the surveyed thought that the idea behind the lockdown was scientific

(Figure-1), whilst keeping themselves updated about the ongoing crisis through official government and WHO channels. Having to stay home all day and “over-work”, almost half of the individuals felt the lockdown both mentally and physically challenging, their work routines having become more time constraining, were experiencing boredom, depression, and stress. Several studies around the world are being conducted to study the mental fatigue caused by the pandemic¹⁰. Similar to popular belief, two-thirds thought that there would be a drastic change in their post lockdown work style as well¹², and almost three-quarters claimed that the lockdown did not hamper their financial security (Figure-2) while they believe the labour industry and travel businesses were suffering the most on the financial front.

Ample amount of time, and an urge to distress led a meager 41% start a weight loss diet, but an astonishing half of the rest caved in to eating with no restraints. Almost everyone owns up to using bingeing Netflix and YouTube more during the lockdown, demanding a lowering in price of subscription-based OTT (over-the-top) services, whilst 93% argue that their smart phone has become a daily necessity with school and university teachers and professors making up majority^{8,12}. Almost everyone misses travelling (Figure-3). This figure falls to a mere three-fourths when it comes to re-establishing contact with old friends but have created deeper bonds with their families during this lockdown, and astoundingly falls even further to 65% when it comes to craving street food. The community is still quite divided on online gaming, and most answered quite conservatively when asked about what meaningless entertainment meant to each of them.

89% consider the rapid spread of the virus a direct or indirect result of overpopulation, while 96% crucify churches, mosques, and temples for not helping people with the money they had hoarded in the name of God and declare to never again donate to such institutions. Most of the surveyed discussed out at people who have spread falsified or unverified news about corona virus and claim to have not done so themselves while stressing upon how this pandemic has taught the world to give attention to hygiene.

The Rest: The Newly Rendered Jobless

Work-from-home professionals make up less than a quarter of the total population. They are few and far between a crowd of daily wage earners. The number of stores largely outnumbers the number of salaried personnel. And the number of labourers outnumber the number of stores, leading to an ever-growing competition for gaining trust of consistent customers and well as the art of landing jobs as salesperson. No doubt, the labourer community and the sales work force engaged in retail all faced a comparable circumstance: pay cuts were the least of their worries when they jobs were on the line. The situation was more severe for the migrant workers who had no means of travelling daily to their workplaces, inevitably having to forfeit their

jobs¹³. While accepting a pay cut is often preferred over getting laid off with an uncertainty in future opportunities, being unable to afford daily necessities is not something anyone can overlook. Despite all the massive efforts made, the economy was undoubtedly approaching a standstill and on the verge of an

imminent collapse. A crisis that even the uber rich would be vulnerable to. Factories having to remain closed day after day, amassing immeasurable losses, all the industries came crumbling down dragging the economy along.

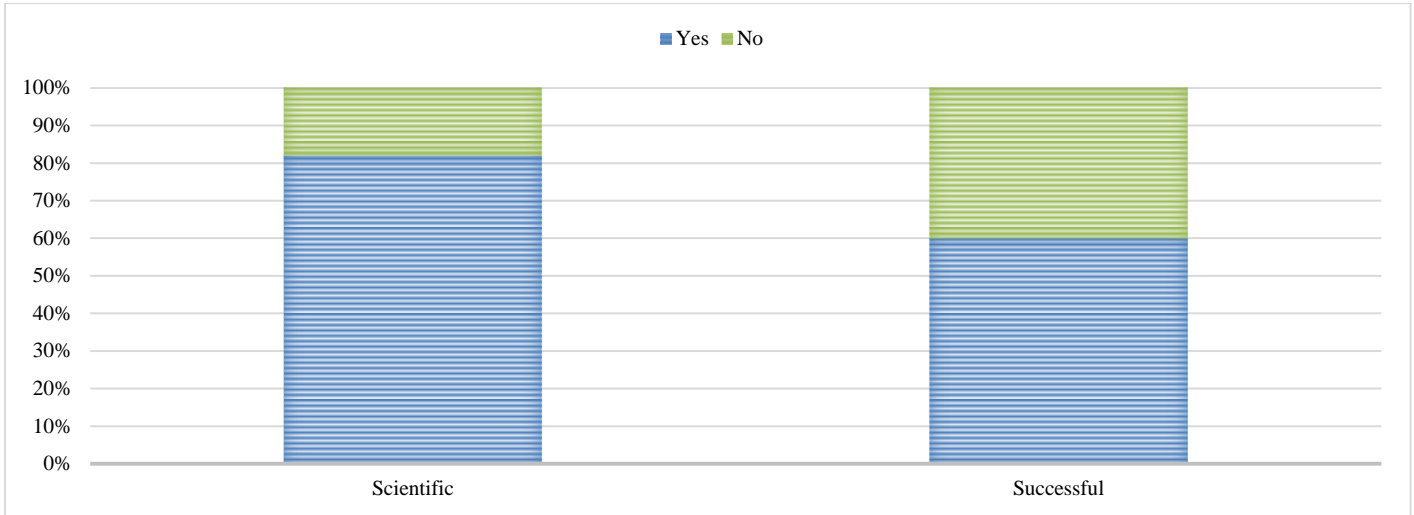


Figure-1: Perception of lockdown due to Corona virus pandemic.

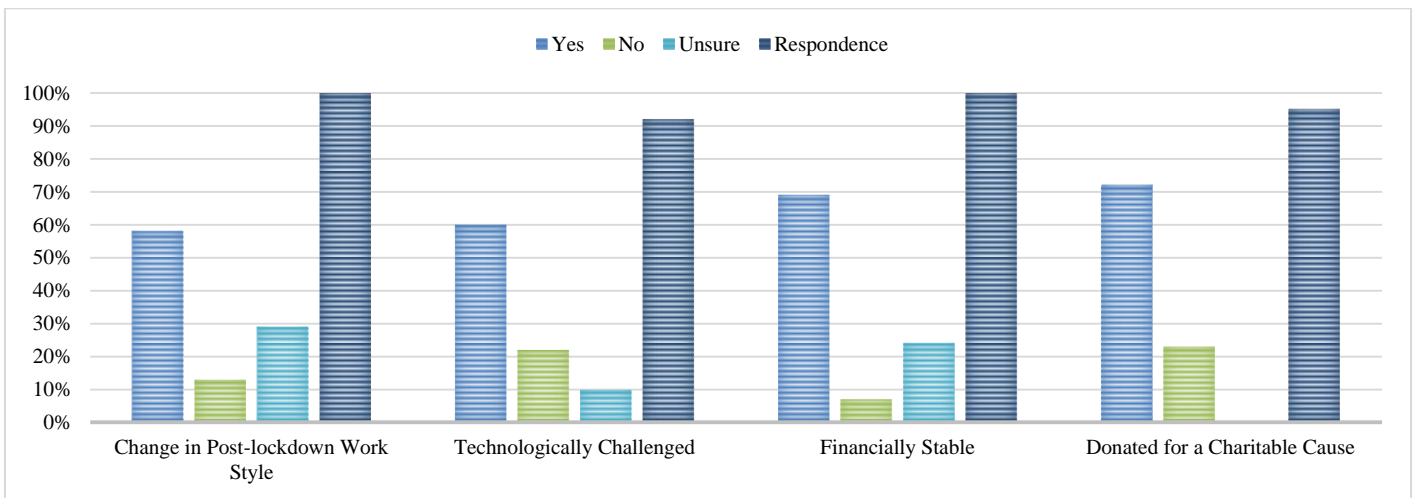


Figure-2: Circumstances faced by salary men/women during lockdown.

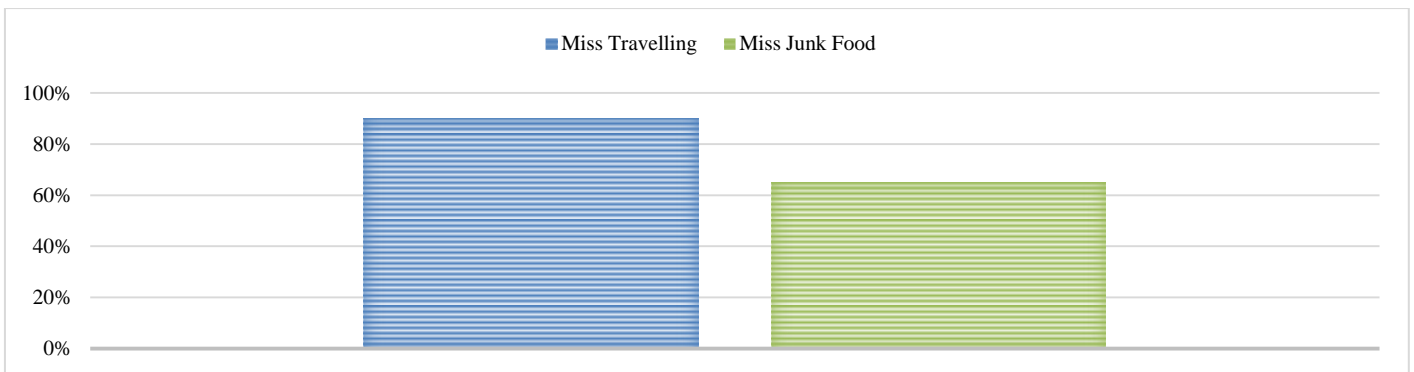


Figure-3: Thoughts on non-essentials and recreational activities.

From the Perspective of the Average Consumer

All over the world, as well as in Kolkata, the average consumer was faced with a terrible dilemma: on one hand, most of the stores remained closed day after day, and on the other hand was a fear of prices of items soaring to the realm of unaffordability⁴. Contemplating cease in production, and consequently discontinuation of steady supply leading to rise in demand as well as prices, a hoarding mentality started to develop which was quickly suppressed by the “one per person” quota system that only allowed the purchase of only a single unit of in demand items¹⁴. But hoarding came second as a stalled industrial sector meant job cuts and salary cuts.

Even those who considered themselves financially stable were nearing insecurity. So, there are several questions regarding financial security of the common people which are the queries of the people of the urban sector like – whether the average middle-class consumer was now spending less or more than what he had to pre-lockdown, or he was still able to afford the same household articles, or he now must compromise on his expenses.

Inflation in the Megacity of Kolkata amidst the Pandemic

An answer to the above query may be reached by observing the consumer price indices of Kolkata (Table-2) during the pre-lockdown, lockdown, and post-lockdown periods. Statistically, a consumer price index (plural: indices) or CPI is the price of a standard basket of goods and items, such as, housing, apparel, food and beverages, medical care, recreation, education, communication, transportation, and others during a given period of time.

CPI is essentially a ratio of prices of a set quantity of items in a given region during two different time points, and is defined as,

$$CPI = \frac{\text{Value of Basket in Current Year}}{\text{Value of Basket in Base Year}} \times 100$$

The CPI largely manifests an idea about the cost of living in a certain region during a specified time interval. But finding the difference in CPIs of two different time intervals would allow for understanding the change in the standard of living if any. Determining the percentage change in CPI of two subsequent time periods, is defined as the inflation rate and is given by,

$$\text{Inflation Rate} = \frac{\text{New CPI} - \text{Old CPI}}{\text{Old CPI}} \times 100$$

The Consumer Price Indices of Kolkata (calculated with base year 2001 = 100) when plot, clearly show an upward linear trend with no sudden peaks or troughs (Figure-4). The linear trend is given by the equation $y = 0.0403x - 1469.1$ with an R^2 of 0.8829.

Table-2: Consumer Price Indices of Kolkata Metropolis.

		CPI			
Month	Year	2019	2020	2021	2022
	Jan		284	296	307
Feb		285	296	302	326
Mar		288	295	305	330
Apr		290	299	306	338
May		289	302	306	338
Jun		290	304	307	339
Jul		291	307	308	341
Aug		292	309	311	345
Sep		292	312	313	346
Oct		298	316	317	347
Nov		299	318	318	344
Dec		303	314	318	340

Source: Labour Department, GoWB

Again, the lack of any outliers, or in other terms, spikes and dips, is reinforced by the calculation of the means and the medians of each year (Table-3). The values overlap one another, that is, they are very close to each other. The variances and covariance’s (Table-4), and standard deviations (Table-3) of the consumer price indices, computed year versus year, are within acceptable limits as well, indicating a stable linear increase in the consumer price index over the months.

When the Covid-19 data points are graphed alongside the CPI values on the same plot (Figure-5), one imitates an almost straight line while the other, a mountain range, with countless peaks and valleys. The correlation of 0.04349 (Table-5) indicates a minute positive relationship between them. Mapping the values on a scatter plot (Figure-6) supports such a conclusion and further regression analysis, setting consumer price index as the dependent variable and the daily average Covid-19 case count of a month as the independent variable, produces an R^2 of 0.001891 (Table-6, 7, 8), a value strong enough to conclude that the number of Covid-19 cases had little to no impact on change in the prices of items. Such a low value of R^2 suggests that the model has no significance, and no feasible prediction model can be obtained with the two variables in question.

When the consumer price indices of each year are plot separately on the same graph, the curves for the years 2019, 2020, and 2021 mostly overlap each other, showing no notable change in CPI of the months in subsequent years, while that of 2022 is a step above the rest (Figure-7).

computed and recorded in a table. The mean of the differences for a whole year is taken and the average is divided by the mean consumer price index for the previous year. Finally, the acquired ratio is multiplied by 100 to take it into a percentage form, giving the mean inflation rate. For instance,

Comprehending the change in prices will be simpler by using a mean rate of inflation for a year. To calculate the statistic, first the month-by-month difference for successive years are

$$\text{Mean Inflation Rate for 2021} = \frac{\text{Mean(Differences of CPIs of 2020 \& 2021)}}{\text{Mean(CPIs of 2020)}} \times 100$$

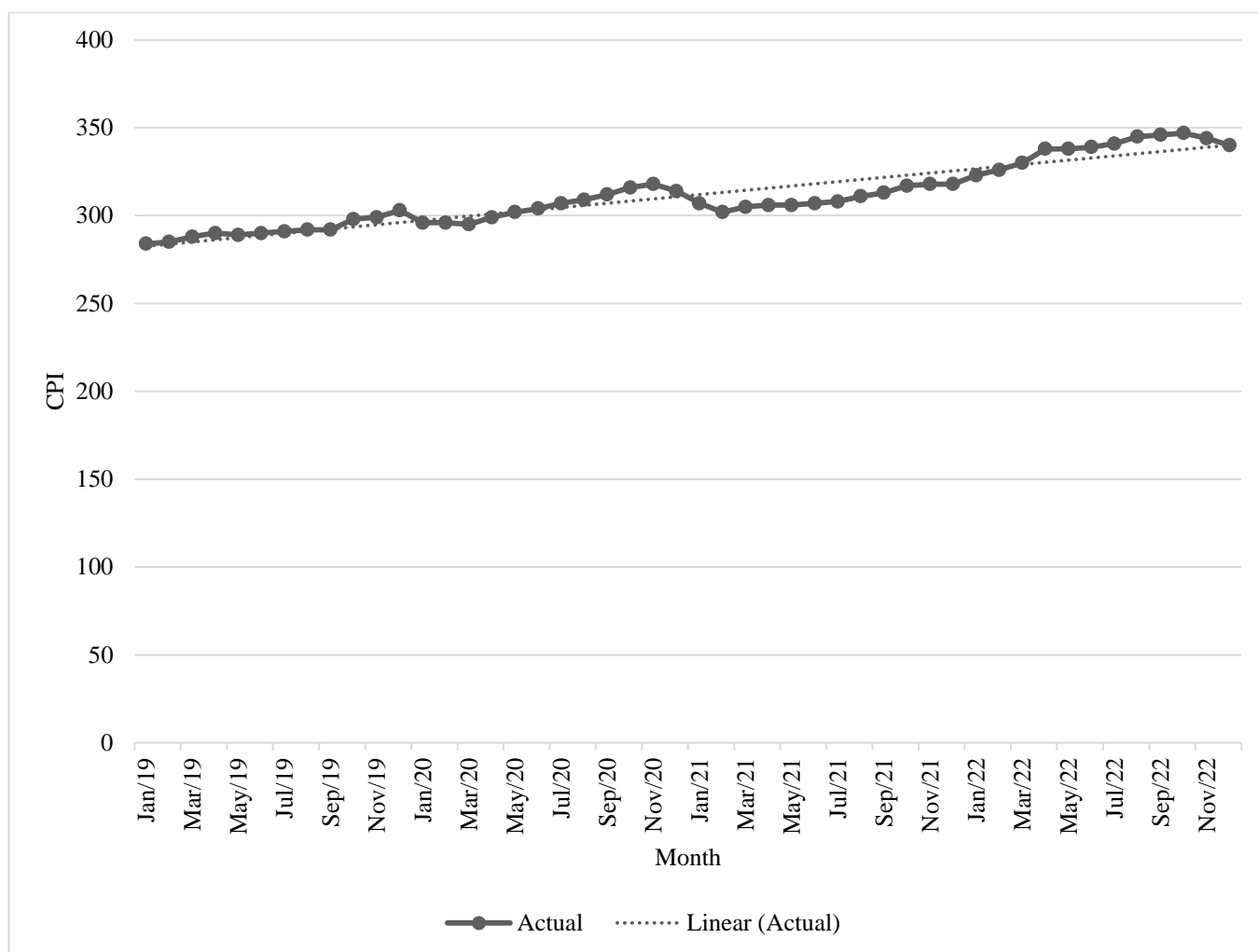


Figure-4: Graphical representation of consumer price indices depicting trends.

Table-3: Analysis of consumer price indices applying standard statistical methods.

Year	2019	2020	2021	2022
Statistical Measures				
Median	290.5	305.5	307.5	339.5
Mean	291.75	305.6667	309.8333	338.0833
Standard Deviation	5.658863	8.21676	5.474459	7.844608

Table-4: Variance and covariance table for consumer price indices.

Year Year	2019	2020	2021	2022
2019	29.35417			
2020	37.83333	61.88889		
2021	26.125	38.61111	27.47222	
2022	29.10417	50.52778	27.51389	56.40972

Table-5: Correlation between consumer price index and Covid-19 case count.

	CPI	Covid-19 Cases
CPI	1	
Covid-19 Cases	0.045967063	1

Table-6: Regression analysis of Covid-19 case count (independent) on CPI (dependent).

Regression Statistics	
Multiple R	0.045967
R ²	0.002113
Adjusted R ²	-0.01958
Standard Error	18.45646
Observations	48

Table-7: ANOVA of regression analysis.

	df	SS	MS = SS/df	F	Significance F
Regression	1	33.17928	33.17928	0.097402	0.756379645
Residual	46	15669.49	340.641		
Total	47	15702.67			

Table-8: Coefficients of regression.

	Coefficients	Standard Error	t Statistic	P-value	Lower 95%	Upper 95%
Intercept	310.9672	2.910879	106.8293	8.96E-57	305.1078711	316.82646
Variable	0.000201	0.000645	0.312094	0.75638	-0.0010967	0.0014992

Table-9: Mean yearly inflation rate in the megacity of Kolkata.

Year Month	CPI Delta		
	2019-20	2020-21	2021-22
January	12	11	16
February	11	6	24
March	7	10	25
April	9	7	32
May	13	4	32
June	14	3	32
July	16	1	33
August	17	2	34
September	20	1	33
October	18	1	30
November	19	0	26
December	11	4	22
Standard Deviation	4.122187	3.639014	5.610461
Mean	13.91667	4.166667	28.25
Median	13.5	3.5	31
Mean Inflation Rate	4.77%	1.36%	9.12%

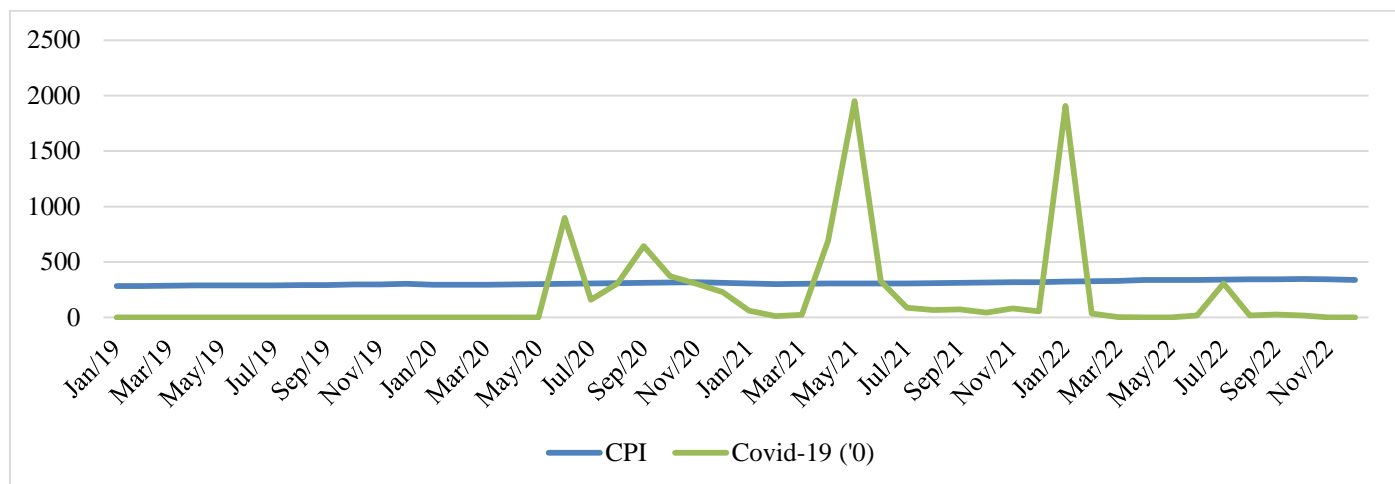


Figure-5: Graphical representation of consumer price indices and Covid-19 cases in Kolkata metropolis.

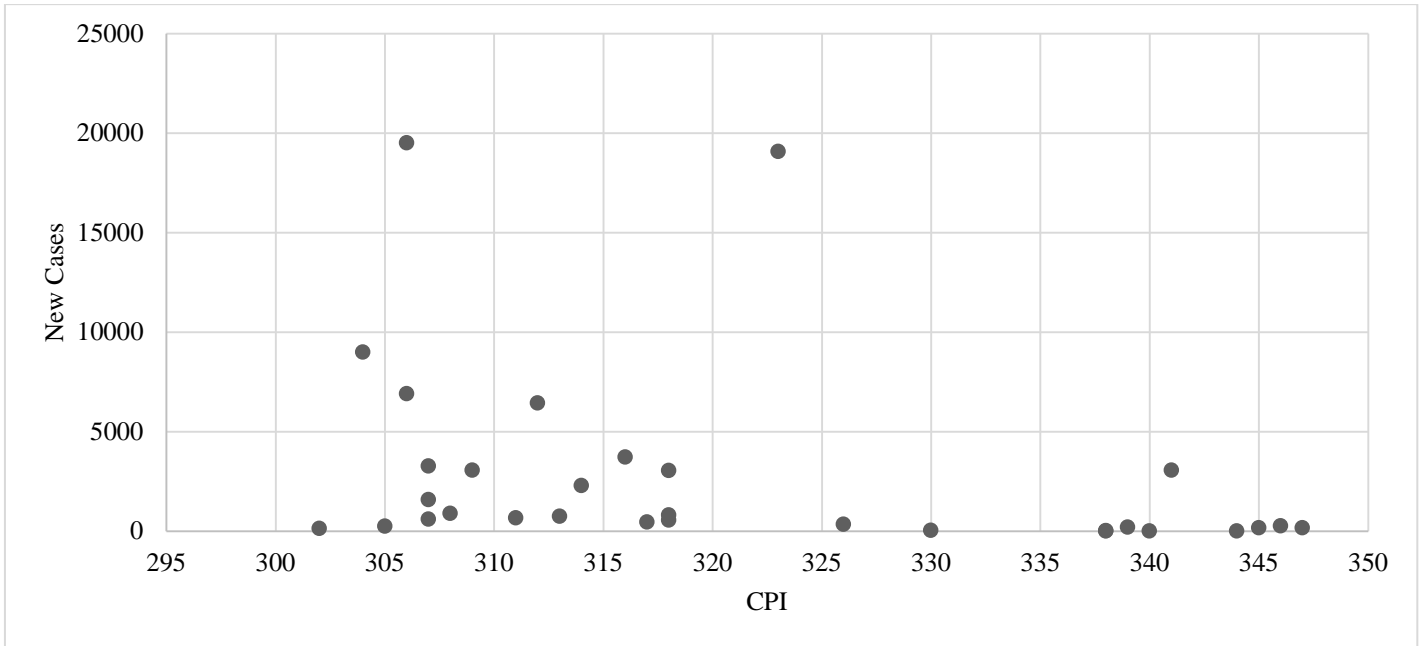


Figure-6: Scatter plot of Covid-19 case counts over CPI.

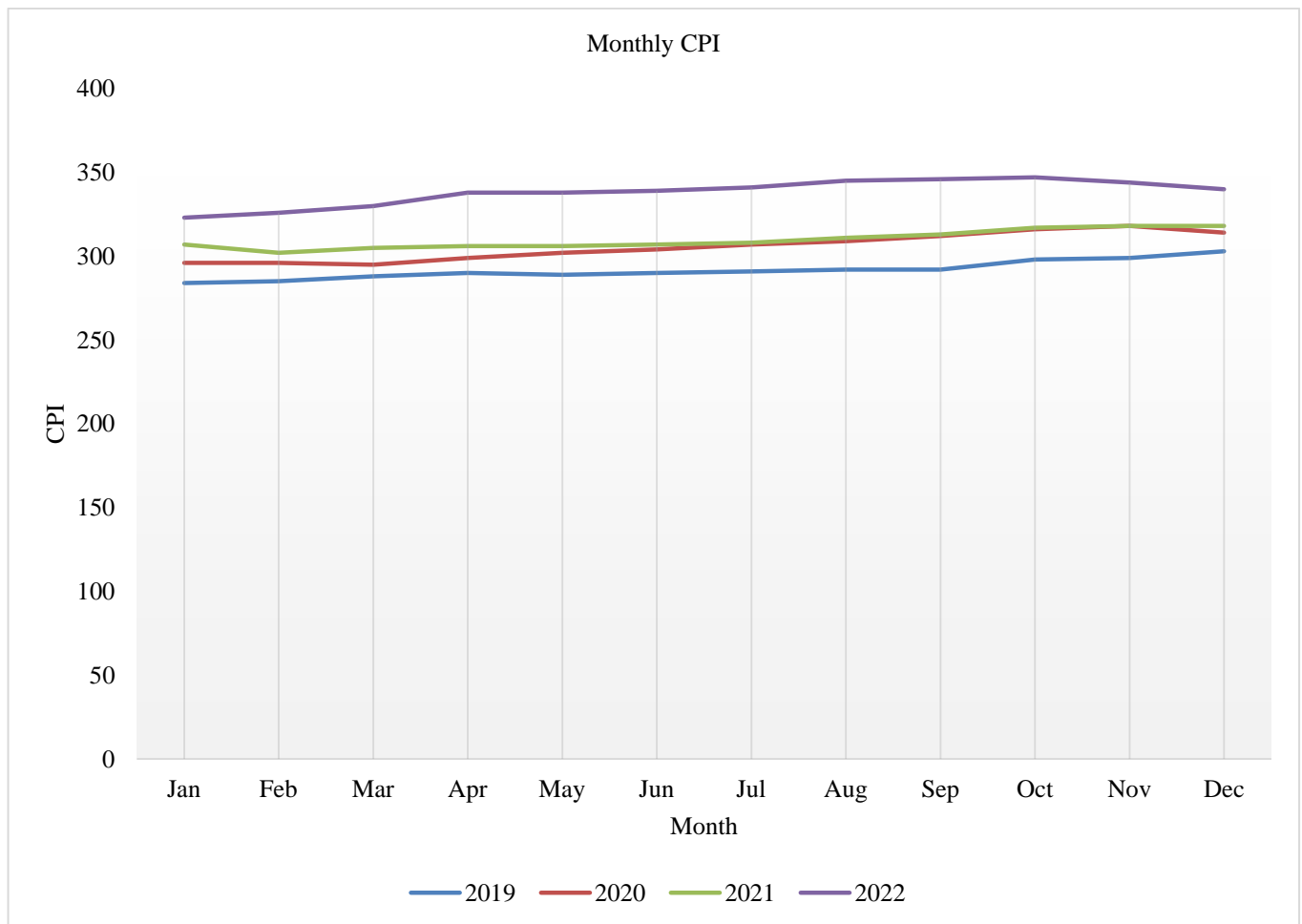


Figure-7: Monthly consumer price indices per year.

Conclusion

The year-on-year increase in the consumer price index is very small for the 2019-20 (pre-Covid-19), and the 2020-21 (Covid-19) periods (Table-9). It is an indication that greens, groceries, meats, healthcare, toiletries, and other commodities' retail prices were not affected by the pandemic. Moreover, the stability of prices also indicates that supply was ample and anticipation of a foreseeable halt in production, though well-founded, was deemed unnecessary in the end. Credit, where due, should be given to quick-thinkers and the imperfect but swift transition to working remotely where applicable and maintaining social distancing wherever applicable.

The fact that the prices of items did not increase during the Covid-lockdown period, may be the chief reason why the delta for the 2021-22 (post-Covid-19) years is so much higher than the previous ones. The impact of the Covid period led businesses and companies to hike prices in view of regaining their footing in the market and rebuilding all the lost capital during the corona virus pandemic. During the lockdown, the government had taken the initiative to step in and provide monetary support in lieu of an economic crash, the discontinuation of which may be viewed as another important cause for such an enormous inflation in the megacity of Kolkata in the post-Covid year of 2022.

Although it cannot be said with certainty that during the covid period, the average person did not have to compromise on his consumables if he was financially stable. It is visible from the analysis conducted that the prices did not increase by any surprising margins. In contrast, the inflation rate (Table-9) fell to a mere 1.36% in 2021 from 4.77% could have been due to some intervention to make necessities readily available and affordable to all. The analysis also reveals that the Covid period had minimal or no relationship with the consumer price index, but an inflation rate of 9.12% in 2022 leads to quite a different deduction: that the effect was, in reality, quite present but delayed to such an extent that it was observable only in the post-lockdown era.

Upon further investigation, it was found that the prices of commodities (petroleum, linens, etc) that had dropped drastically during the pandemic due to a fall in demand were regaining their lost level in the price strata. However, for the in-demand essentials (hygiene products, processed food supplies, etc) that had received an immense increase in demand, their newly achieved higher price point has become the new norm, even in the "Covid-free" era. The average consumer might have had to financially struggle more in the post-covid-19 period than they had to during the pandemic itself due to a steep rise in prices of daily commodities, leading to a higher cost of living. This trend is more than likely to continue for a few more years until equilibrium is reached through the balancing out of prices with simultaneous increase in pay grades of salary men/women in the city.

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