

Meeting of the Group of Experts on Consumer Price Indices

Expenditure weights

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Background

- Statistics Botswana releases CPI on monthly basis with a 15 days lag.
- The CPI is demarcated into three strata, which are Cities & Towns, Urban Villages and Rural villages.
- National indices are published at Group and section level
- Only All item Index is published for Strata's



Current Botswana CPI weights

- The reference period for the current weights is 2015/16
- Weights derived from Botswana Multi_topic Household survey (BMTHS) 2015/16
- Each strata has its own weights
- National weight is the combination of strata's weights



Current Index reference period

- Weight reference period = 2015/16
- Price Reference period = December 2018
- Index reference period = December 2018



STATISTICS BOTSWANA

Expenditure weights in the CPI in light of the Covid-19 lockdown



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Introduction

- The accuracy of weights to represent current expenditure patterns decreases with time.
- in the economy there is a shift in relative prices due to changes in supply and demand of goods and services
- hence changes in the household consumption patterns

supply and demand of goods and services



Household Consumption

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Introduction *continued*

- The Consumer Price Index (CPI) weights need to be revised from time to time
- On the 11th of March 2020, the World Health Organization (WHO) declared the global outbreak a pandemic
- Botswana went into the first lockdown from 2nd of April 2020 to 22nd May 2020
- Capital city and surrounding areas came on another lockdown for two weeks in July 2020.
- A night curfew was introduced from the 24th of December 2020 to the 11th of April 2021



Introduction *continued*

- Curfew times were from 2000hrs to 0400hrs
- Curfew was extended until the end of September 2021 with times revised to be from 2200hrs to 0400hrs effective from 12th April 2021.
- Access to alcohol was restricted from 20th March 2020, until end of June 2020 when the lifting of the Ban only lasted for a month
- The ban was reinstated on the 31st of July 2020 until 2nd of September 2020



Findings on Weights

The paper compares the weights used for the current CPI with the weights computed in 2020 and 2022 using

- National accounts data (Household Final Consumption Expenditure, HFCE)
- Price updated weights
- inflation rates computed using these different weights
- Weights derived for 2020 and 2022 as 2022 was close to a normal year
- inflation rates were calculated for 2021 and 2022 with weights reference period as 2020
- The index and price reference period was January 2021 (Jan 2021=100)



BMTHS 2015/16 Weights vs 2020 HFCE Weights

- Significant change was realised in major groups Between the BMTHS 2015/16 weights and the HFCE 2020 Weights

The groups that had a large change where:

- Health, which moved from 3.38 to 8.66 per 100, an increase of 156.0 percent.
- The Transport group decreased by 52.6 percent, moving from 23.43 to 11.10 per 100.
- Alcoholic beverages and Tobacco decreased by 49.3 percent from 4.34 in 2015/16 to 2.20 per 100 in 2020.
- The Food and non-alcoholic beverages was 20.12 in 2020, realising an increase of 48.5 percent, compared to 13.55 in 2015/16.
- Miscellaneous goods and services rose by 35.8 percent from 9.01 to 12.24.



BMTHS 2015/16 Weights vs 2022 HFCE Weights

The groups that showed a major change where:

- Health group with an increase of 48.0 percent from 3.38 to 5.0 per 100
- Alcoholic beverages and Tobacco registered a drop of 42.7 percent, moving from 4.34 in 2015/16 to 2.49 per 100 in 2022.
- Restaurants and hotels realised a decrease of 23.1 percent, from 3.66 to 2.81 per 100.
- The Miscellaneous goods and services weight moved from 9.01 to 10.86 per 100 which is an increase of 20.4 percent.



HFCE Weights 2020 vs 2022

- Weights in both year where compared to the weights in 2015/16
- The weights showed similar patterns of movements with significantly different margins.
- 3 groups out of 12 had a different movement
- These are
 - i. *Housing, water, electricity, gas and other fuels*
 - ii. *Furnishing, Household Equipment & Routine Maintenance*
 - iii. *Education*



HFCE Weights 2020 vs 2022 *Continued*

➤ The groups that had a larger difference margins were;

- i. Health by 108.0 percentage points*
- ii. Transport by 39.8 percentage points*
- iii. Food and non-alcoholic beverages by 36.7 percentage points*



Figure 1: National Weights HFCE National Accounts

Group

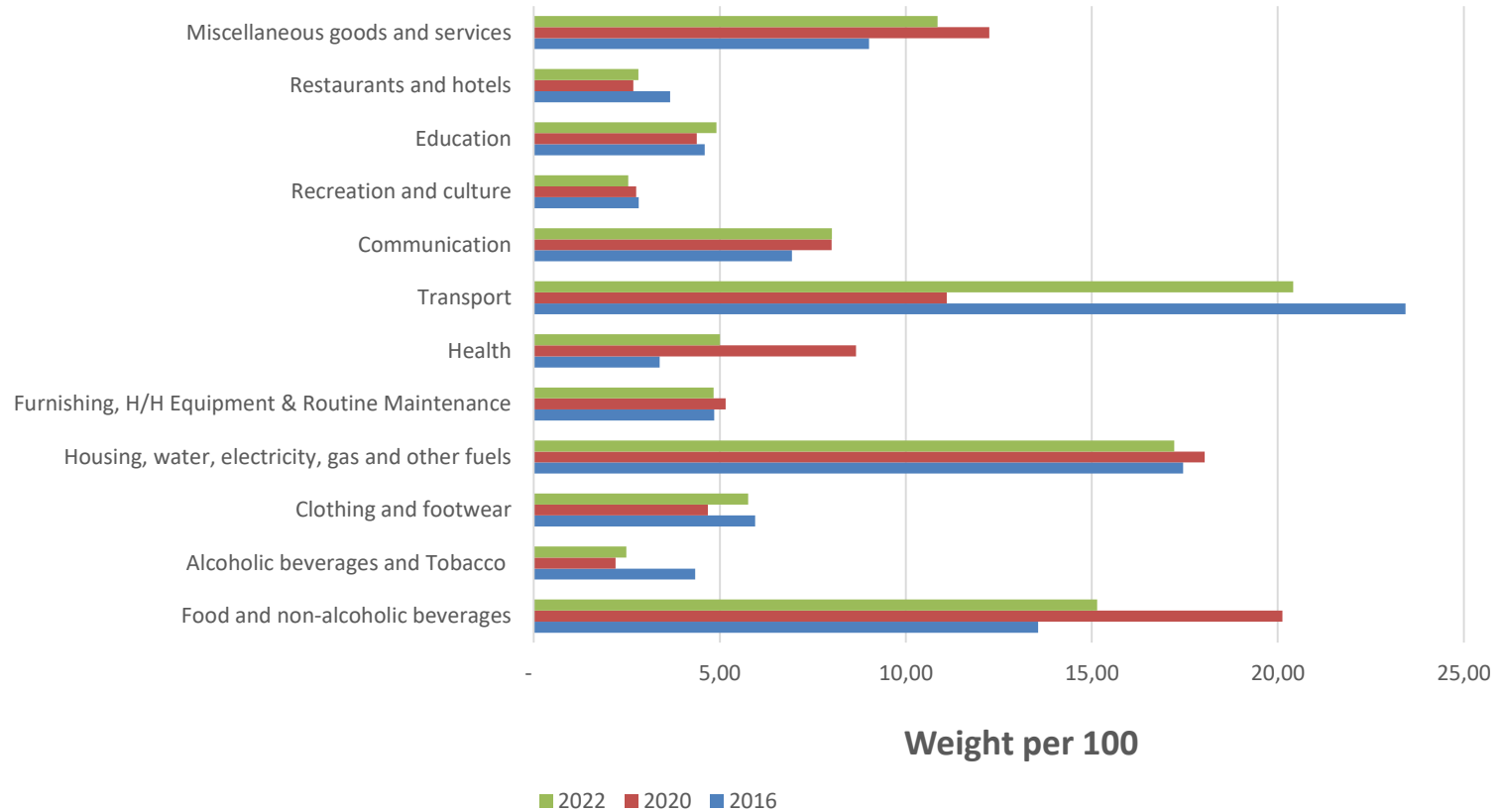
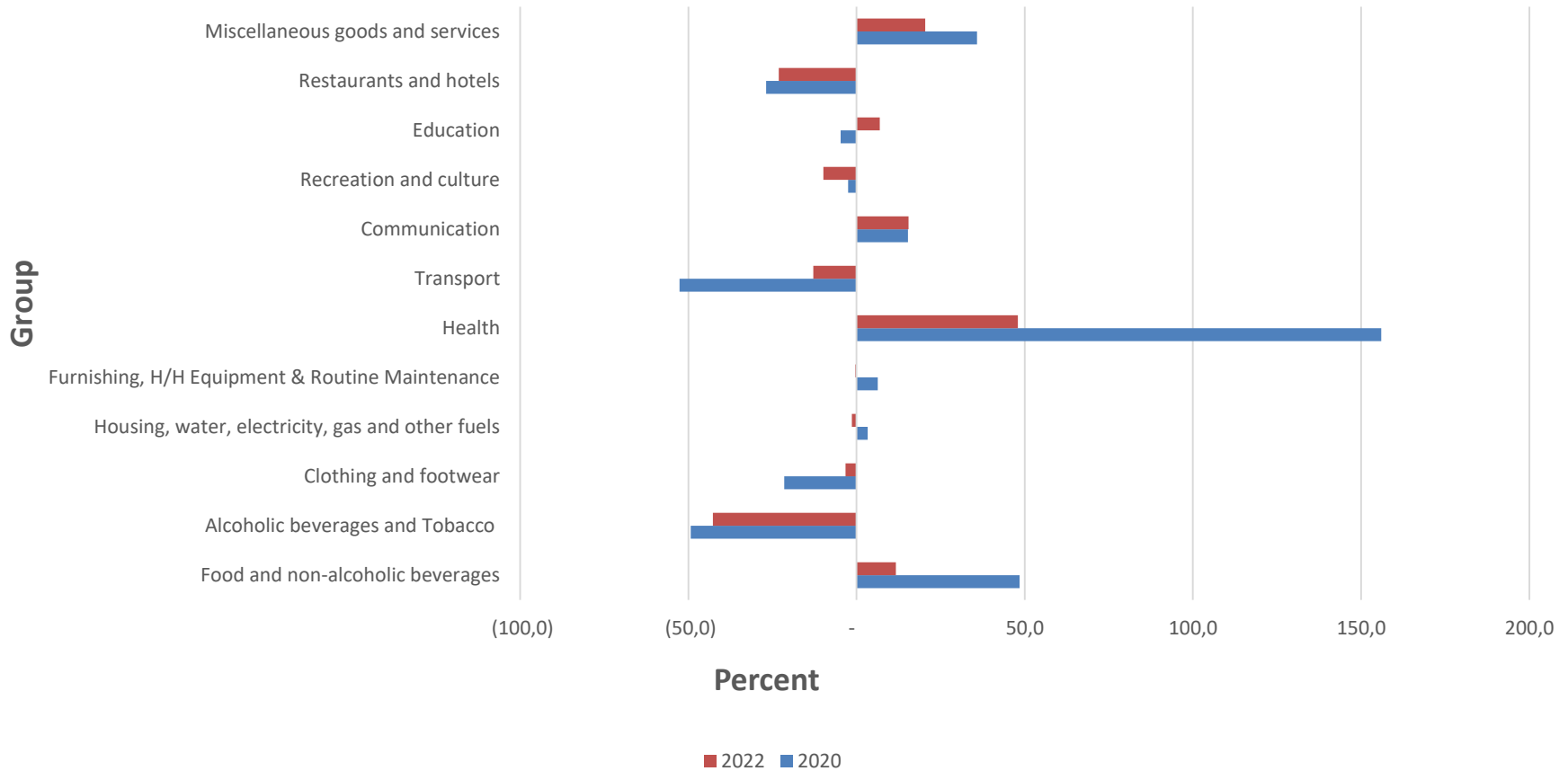




Figure 2: Percentage Change on National Weights HFCE from BMTHS 2015/16





BMTHS 2015/16 Weights VS 2020 Price Updated Weights

- The weights did not show a significant change in the major groups from the BMTHS 2015/16 weights.
- All the groups had a change less than 10 percent, except the Communication group which moved from 6.94 in 2015/16 to 5.70 per 100 in 2020, registering a decrease of 17.9 percent.



BMTHS 2015/16 Weights VS 2022 Price Updated Weights

- The weights in 2022 were different from the weights in 2015/16 with a smaller margin between the two periods.
- The communication group registered a significant decrease of 29.8 percent.
- Transport increased by 23.1 percent.
- Health group and Recreation and culture both recorded a decrease of 16.5 percent.





Price Updated Weights 2020 vs 2022

- Weights were compared to 2015/16 for both years
- There was a similar movement in changes of weights.
- The margins between 2020 and 2022 weights were small.
- The groups that had different directions in the movement of weights were;
 - i. *Education*
 - ii. *Restaurants and hotels*
 - iii. *Alcoholic beverages and Tobacco*
- *Transport and Health* are the only groups that had a difference of more than 10 percentage points between the periods



Figure 3: National Weights- Price Updated

Group

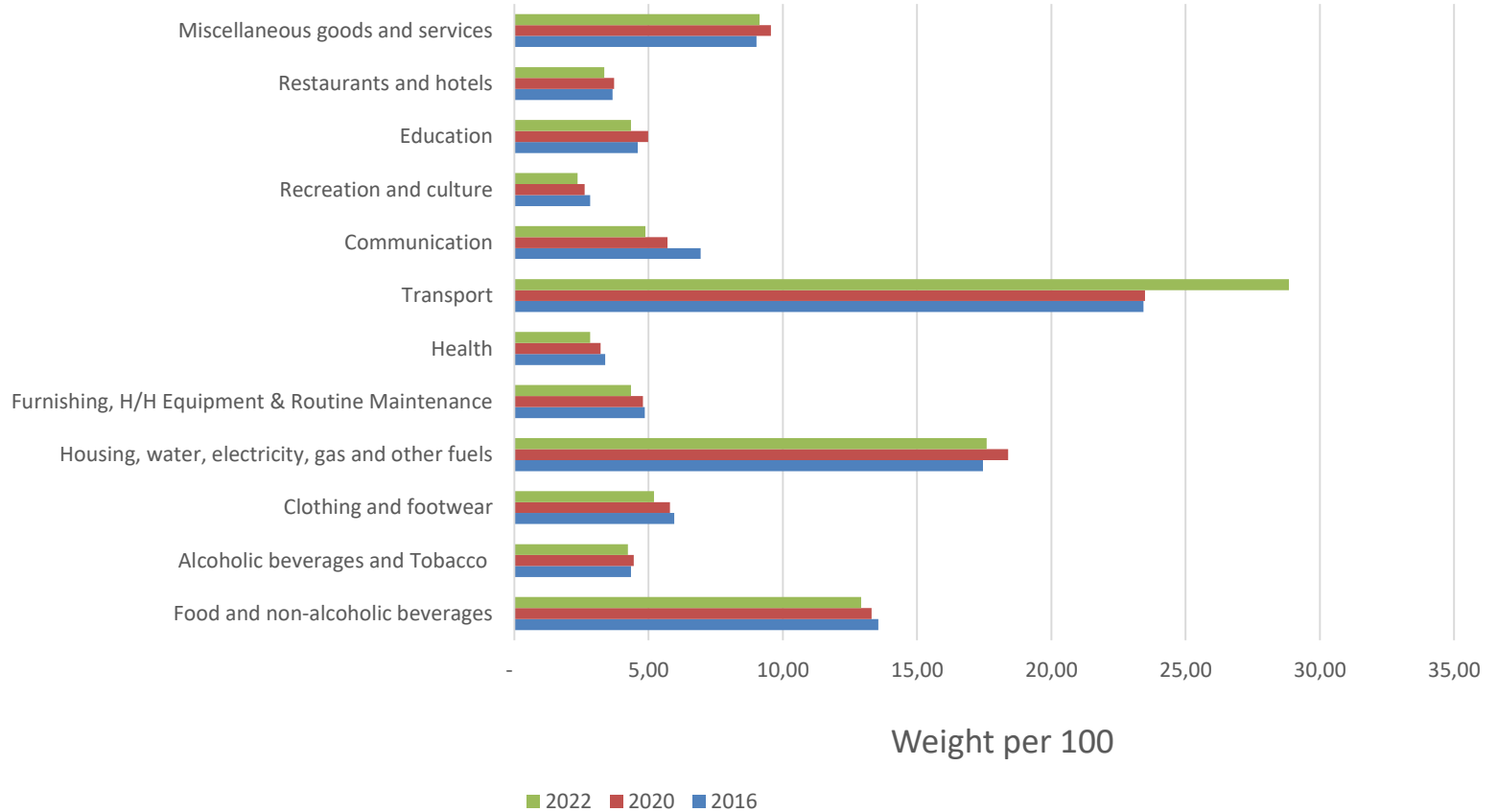
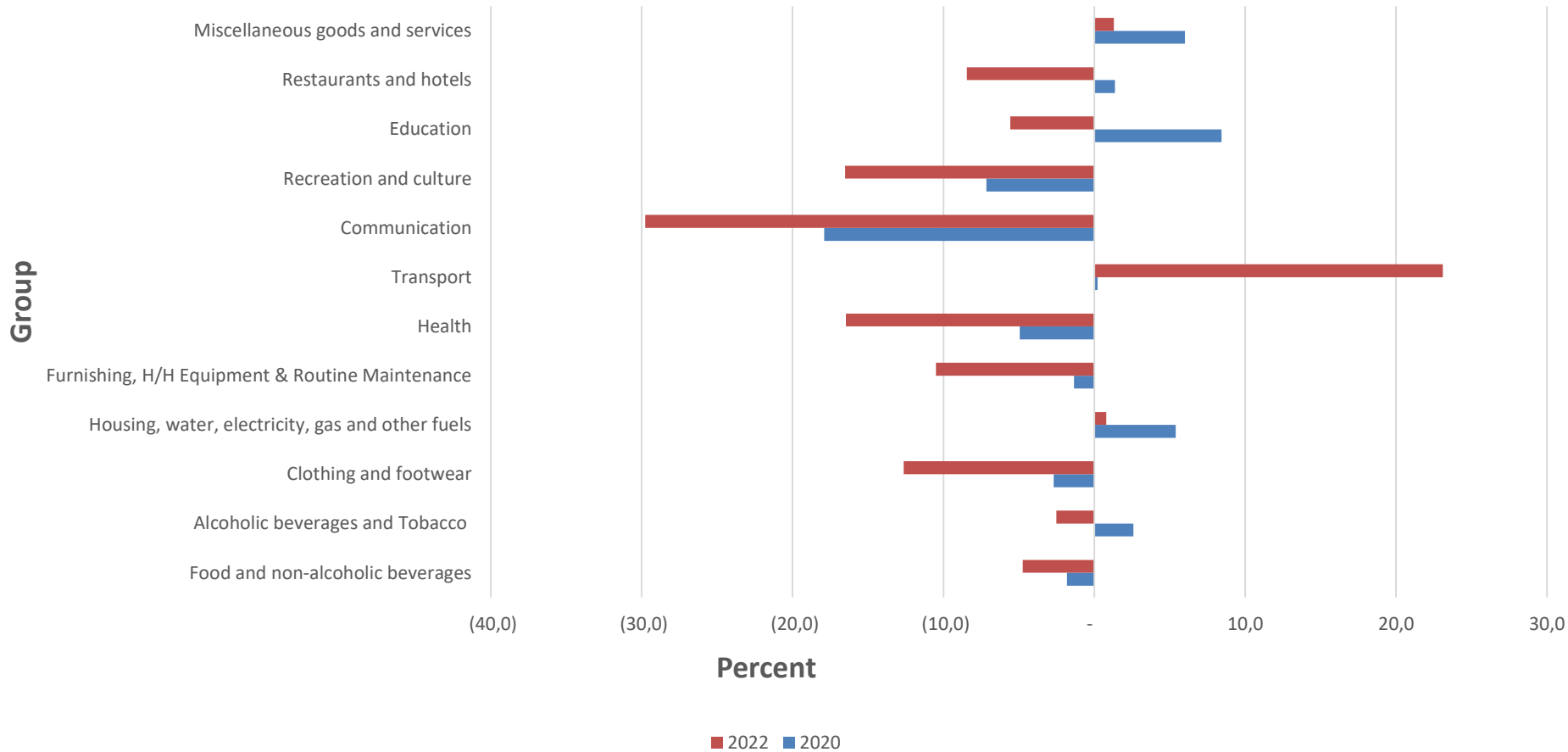




Figure 4: Percentage Change on National Weights Price-Updated from BMTHS 2015/16



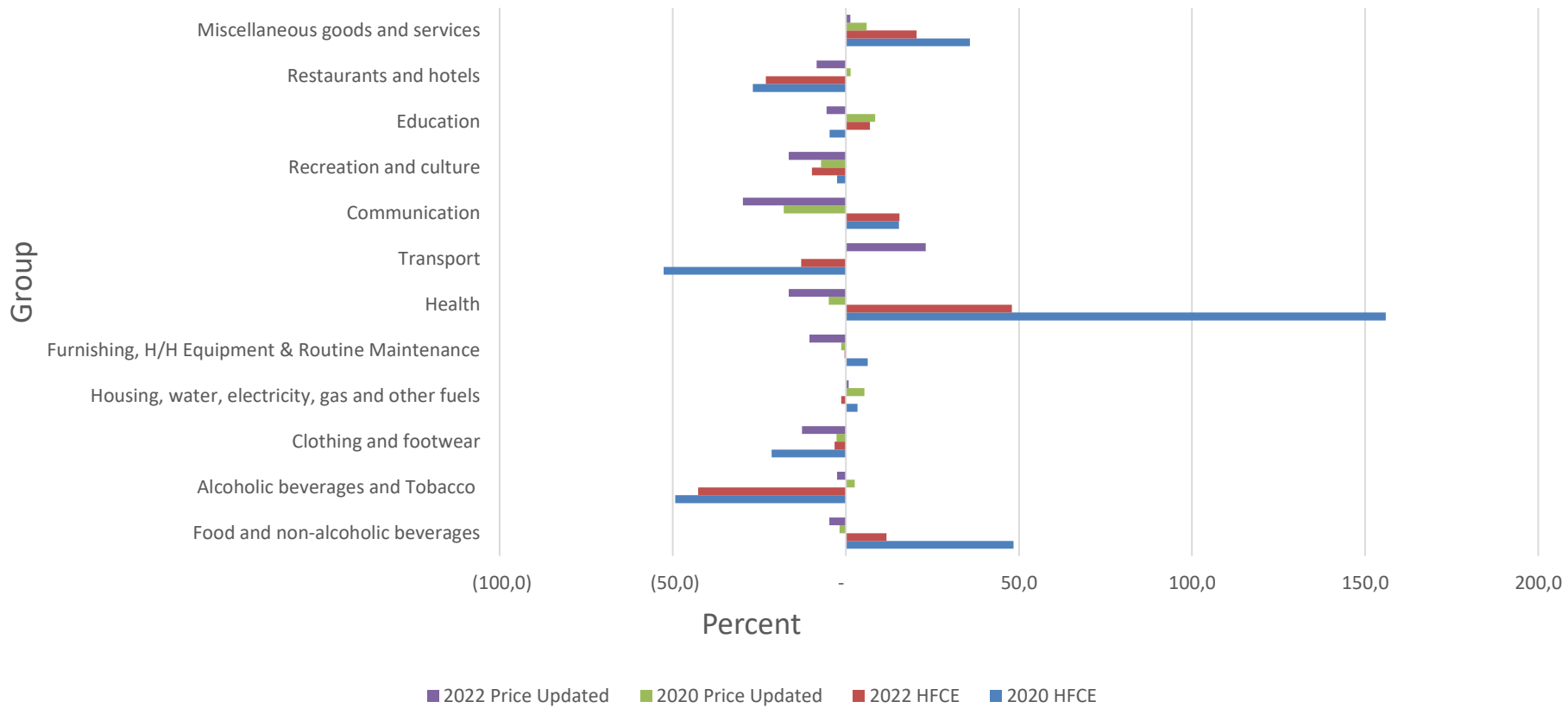


Comparison of HFCE and Price Updated Weights (2020 and 2022)

- HFCE weights showed a larger change than the price-updated weights
- About 66.7 percent had a difference of more than 10.0 percent in 2020 compared to 8.3 percent of the Price updated weights
- In 2022, 58.3 percent had a change of more than 10 percent in HFCE weights compared to 50.0 percent in the price-updated weights.



Figure 5: Percentage Change on National Weights Price-Updated and HFCE from BMTHS 2015/16





INFLATION RATE

- Annual and Monthly inflation rates were calculated using the new weights
 - i. *Weight reference period = 2020*
 - ii. *Price reference period = January 2021*
 - iii. *Index reference period = January 2021*

- The inflations were compared to the published rates

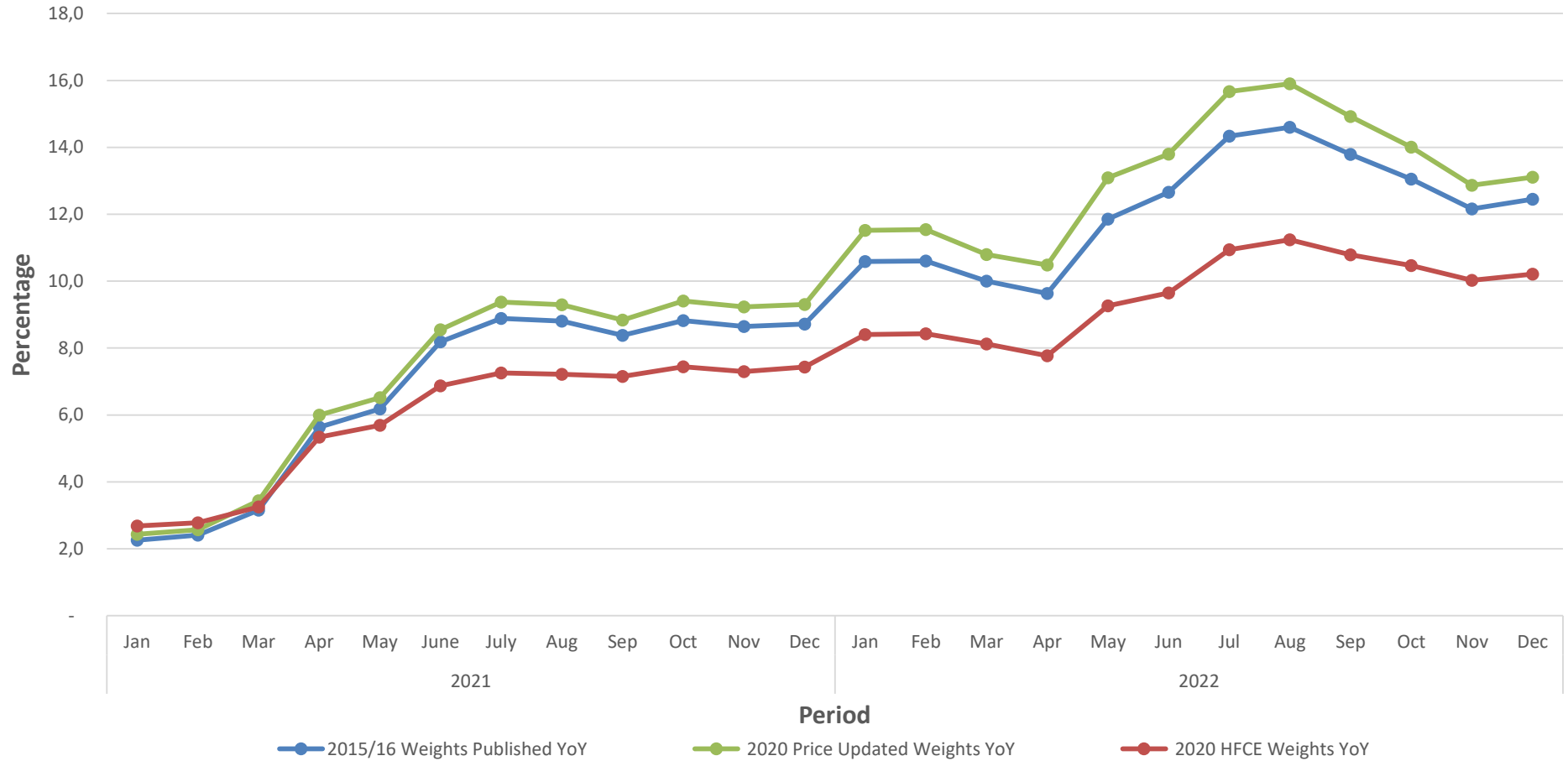


Annual Inflation Rate (year on year)

- Inflation rates moved with a similar pattern to the published rate
- The inflation rate computed using the price-updated weights was higher than the Published rate
- The rate calculated using the HFCE weights was lower than the published rate.



Chart 1: Annual Inflation Rate (Year on Year)



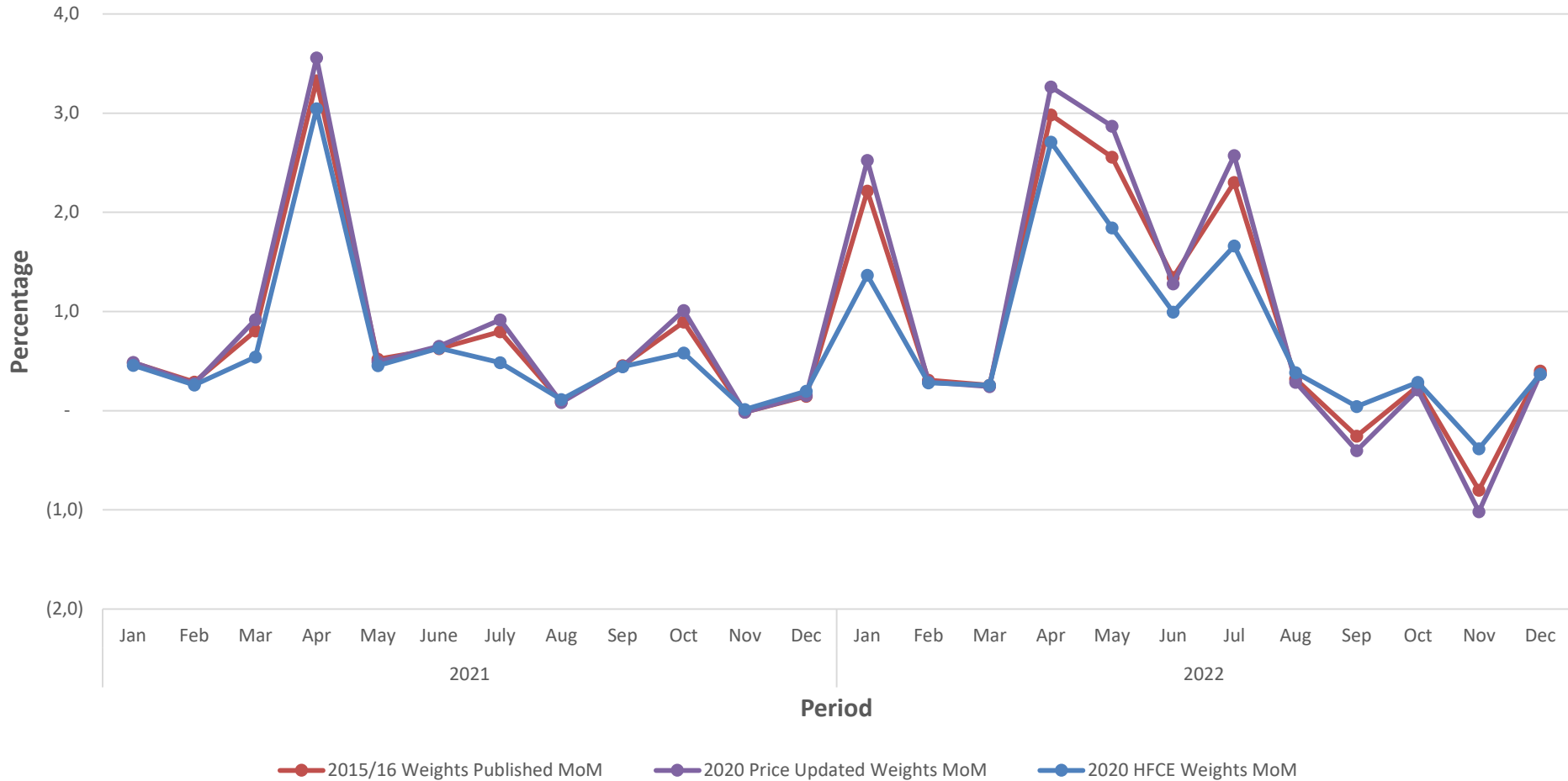


Month on Month Inflation Rate

- Inflation rates also followed the same trend as the published rate.
- The month-on-month inflation rate calculated using the price updated weights moved closely to the published rate than the rate calculated using the HFCE weights



Chart 2: Monthly Inflation Rate (Month on Month)





Conclusion

Price Updated Weights

- Price updating the weights normally results in an index number that is upward biased relative to the target indices
- A higher price change will result in a high increase in the weight of that particular product
- Therefore price updated weights do not necessarily reflect the importance of that product in the CPI basket
- Consumers substitute items as they become expensive for the cheaper ones



Conclusion *Continued*

Household Final Consumption Expenditure (National accounts)

- The HFCE from National accounts can be used to derive the CPI Expenditure weights.
- The advantage of HFCE is that it is updated every year
- The disadvantage is that National Accounts is available at the national level only
- Therefore it is a challenge to obtain elementary aggregates weights



Expenditures in 2020 Used to Derive CPI Weights

- 2020 was not a normal year as many economic activities were disrupted due to lockdowns and restrictions on movements (Domestic and international).
- Using any of the methods to introduce weights in CPI will bring in Biasness
- The consumption pattern in 2020 will not reflect a similar pattern in the following years.
- Some of the consumption patterns followed almost the same trends from 2020, e.g. the relative importance of the transport group will go down as some of the organisations/companies have opted for working from home system.



Table 1: National Weights

Code	Group Name	2015/16 BMTHS	2020 HFCE	2022 HFCE	2020 Price Updated	2022 Price Updated
1	Food and non-alcoholic beverages	13,55	20,12	15,14	13,31	12,91
2	Alcoholic beverages and Tobacco	4,34	2,20	2,49	4,45	4,23
3	Clothing and footwear	5,95	4,68	5,76	5,79	5,20
4	Housing, water, electricity, gas and other fuels	17,45	18,04	17,21	18,39	17,59
5	Furnishing, H/H Equipment & Routine Maintenance	4,85	5,16	4,83	4,79	4,34
6	Health	3,38	8,66	5,01	3,22	2,83
7	Transport	23,43	11,10	20,41	23,48	28,85
8	Communication	6,94	8,00	8,01	5,70	4,87
9	Recreation and culture	2,82	2,75	2,54	2,62	2,35
10	Education	4,60	4,38	4,91	4,98	4,34
11	Restaurants and hotels	3,66	2,68	2,81	3,71	3,35
12	Miscellaneous goods and services	9,01	12,24	10,86	9,56	9,13



Table 2: Percentage Difference on National Weights, Compared To BMTHS 2015/16

Code	Group Name	2020 HFCE	2022 HFCE	2020 Price Updated	2022 Price Updated
1	Food and non-alcoholic beverages	48,5	11,7	(1,8)	(4,8)
2	Alcoholic beverages and Tobacco	(49,3)	(42,7)	2,6	(2,5)
3	Clothing and footwear	(21,5)	(3,2)	(2,7)	(12,6)
4	Housing, water, electricity, gas and other fuels	3,3	(1,4)	5,4	0,8
5	Furnishing, H/H Equipment & Routine Maintenance	6,3	(0,4)	(1,3)	(10,5)
6	Health	156,0	48,0	(4,9)	(16,5)
7	Transport	(52,6)	(12,9)	0,2	23,1
8	Communication	15,3	15,5	(17,9)	(29,8)
9	Recreation and culture	(2,5)	(9,8)	(7,2)	(16,5)
10	Education	(4,7)	6,9	8,4	(5,6)
11	Restaurants and hotels	(26,9)	(23,1)	1,4	(8,4)
12	Miscellaneous goods and services	35,8	20,4	6,0	1,3



Table 3: Inflation rate

Year	Month	2015/16 Published YoY	2015/16 Published MoM	2020 HFCE YoY	2020 HFCE MoM	2020 Price Updated YoY	2020 Price Updated MoM
2021	Jan	2,3	0,5	2,7	0,5	2,4	0,5
	Feb	2,4	0,3	2,8	0,3	2,6	0,3
	Mar	3,2	0,8	3,3	0,5	3,4	0,9
	Apr	5,6	3,3	5,3	3,0	6,0	3,6
	May	6,2	0,5	5,7	0,5	6,5	0,5
	June	8,2	0,6	6,9	0,6	8,5	0,7
	July	8,9	0,8	7,3	0,5	9,4	0,9
	Aug	8,8	0,1	7,2	0,1	9,3	0,1
	Sep	8,4	0,5	7,2	0,4	8,8	0,4
	Oct	8,8	0,9	7,4	0,6	9,4	1,0
	Nov	8,6	(0,0)	7,3	0,0	9,2	(0,0)
	Dec	8,7	0,1	7,4	0,2	9,3	0,2

Year	Month	2015/16 Published YoY	2015/16 Published MoM	2020 HFCE YoY	2020 HFCE MoM	2020 Price Updated YoY	2020 Price Updated MoM
2022	Jan	10,6	2,2	8,4	1,4	11,5	2,5
	Feb	10,6	0,3	8,4	0,3	11,5	0,3
	Mar	10,0	0,3	8,1	0,3	10,8	0,2
	Apr	9,6	3,0	7,8	2,7	10,5	3,3
	May	11,9	2,6	9,3	1,8	13,1	2,9
	Jun	12,7	1,3	9,7	1,0	13,8	1,3
	Jul	14,3	2,3	10,9	1,7	15,7	2,6
	Aug	14,6	0,3	11,2	0,4	15,9	0,3
	Sep	13,8	(0,3)	10,8	0,0	14,9	(0,4)
	Oct	13,1	0,2	10,5	0,3	14,0	0,2
	Nov	12,2	(0,8)	10,0	(0,4)	12,9	(1,0)
	Dec	12,4	0,4	10,2	0,4	13,1	0,4



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THANK YOU

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