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***GUAM***  
***CONSUMER PRICE INDEX***

Cost of Living Section

1st Quarter 2020  
VOL. XLVI, No. 1

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Bureau of Statistics and Plans  
Business and Economic Statistics Program  
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**DEFINITION OF THE CONSUMER PRICE INDEX**

The CONSUMER PRICE INDEX (CPI) is a measure of the average change in prices over time of goods and services purchased by households, both families and single person living alone. The Guam 2008 CPI is based on the concept of a representative "market basket", a sample of all goods and services that consumers purchase, as determined by the 2005 Household Income and Expenditure Survey (HIES) funded by the U.S. Dept. of Interior to the U.S. Census Bureau, and a similar in design with the U.S. CPI.

The CPI is measured from a total of 168 items from 8 major groups, and indices are computed at two different levels of aggregation. More than 1,060 price quotations are collected during the middle month of each quarter either by phone or on-site survey by qualified price enumerators. There are approximately 200 business outlets included in the construction of the CPI, ranging from grocery, department and hardware stores to a variety of service establishments. This report provides average price changes for all items, groups, subgroups and special indexes from consecutive quarters to one year earlier. An annual average and annualized inflation rate are also reported. Indexes are subject to

**HOW TO INTERPRET INDEX CHANGES**

A price change can be expressed as a percentage change between two periods, as a difference in index points between a given period and a base period assigned an index of 100.0. Thus, an index of 110.7 for a given period means the price level has increase by 10.7% from the base period of 100.0. It does not mean a 10.7% change from the immediately preceding period as shown in example 1:

**Example I:**

Period:	1st Qtr. (base period)	2nd Qtr.	3rd Qtr.
Index:	100.0	108.4	110.7
	-----8.4% change-----		-----2.1% change-----
	----- 10.7% change -----		

Any period, such as the 2nd Quarter in the next example, can be converted to a base period by dividing all indices individually by the periods' index, then multiplying the results by 100.

**Example II:**

Period:	1st Qtr. (base period)	2nd Qtr.	3rd Qtr.
Index:	100.0	108.4	110.7
Period:		2nd Qtr. (base period)	3rd Qtr.
Index:		100.0	102.1
		-----2% change-----	

In example II, we dealt with a change in price index from a given quarter to the quarter immediately succeeding it – a 2.1% change from the second to the third quarter. However, many economic statistics, such as personal income, government revenues, and expenditure, are reported on an annual basis. The equivalent annual rate is used to determine what the index would be if a price change during a three-month period continues at the same rate for four quarters, a twelve-month period. The annual rate is often used to achieve uniformity in statistical expression.

Thus, a quarterly change of 1.0% is equivalent to an annual rate of 4.1%. If prices were to increase 1.0% each quarter for four quarters, the annual increase would be 4.1%. Derivation of this figure is shown in the Example III.

**Example III:**

$$P_n = P_o(1+i)^n \quad \text{where}$$

$P_n$  = equivalent annual rate  
 $P_o$  = base index (100.0)  
 $i$  = current rate (1.0%)  
 $n$  = number of periods (4)

Thus, 104.1 = 100.0 (1 + .01)<sup>4</sup>

However, the equivalent annual rate should not be interpreted as a projection or price forecast. It is only a standard form for showing price changes that have occurred. The CPI only reports what has happened, while annual projections must be based on factors which determine future price changes.

Please see [www.bsp.guam.gov](http://www.bsp.guam.gov), for historical CPI data, and other state data resources.

## GUAM CONSUMER PRICE INDEX

### 1. Number of commodity items:

GROUP	*GROUP WEIGHTS	NO. OF ITEMS ALLOCATED
Food	15.60	69
Housing	32.11	42
Apparel & Upkeep	7.61	23
Transportation	8.60	4
Medical Care	20.42	5
Recreation	2.97	5
Education & Communication	2.77	6
Other Goods & Services	<u>9.92</u>	<u>14</u>
	<u>100.0</u>	<u>168</u>

\* Based on the 2005 Household Income and Expenditure Survey (HIES) results.

2. Base period: 4th Quarter 2007 = 100.0

3. Formula:

The index is computed by using base-weighted arithmetic average of prices. The formula used is either in the weighted aggregated form,

$$I_{oi} = \frac{\sum p_i q_o}{\sum p_o q_o} \times 100$$

or its equivalent, the weighted average of price relatives,

$$I_{oi} = \frac{\sum p_o q_o \left( \frac{P_i}{P_o} \right)}{\sum p_o q_o} \times 100$$

where  $p_i$  = the price of the commodity in the reporting period.  
 $p_o$  = the price of the commodity in the base period, and  
 $q_o$  = the quantity of commodity sold in the base period.

4. Weights:

Based on the 2005 Household Income and Expenditure Survey (HIES)

**Guam Consumer Price Index (CPI)**  
**1st Quarter 2020**  
**Volume No. XLVI, No. 1**

The Guam 2020 1st Quarter CPI of 133.5 shows an increase of 0.5 percent over the 4th quarter of 2019, and 2.6 percent when compared to the same period one year earlier. The All Items Less Food Index decreased -0.1 percent, Energy decreased -1.3 percent, All Items Less Food and Energy (core) increased 0.4 percent, Commodities Less Food Index decreased -0.4 percent, Services increased 0.2 percent and All Items Less Hospital Related Services increased 0.5 percent, as compared to the 4th quarter of 2019. The purchasing power is \$ 0.51 when compared to base year 1996.

The Food group index of 149.2 shows an increase of 3.0 percent over the preceding quarter and 1.8 percent when compared to the same period one year earlier. Beef product prices increased 3.4 percent over the preceding quarter and 2.4 percent when compared to the same period one year earlier. Pork product prices decreased -2.5 percent over the preceding quarter and -4.4 percent when compared to the same period one year earlier. Poultry product prices decreased -1.7 percent over the preceding quarter and increased 2.2 percent when compared to the same period one year earlier. Egg product prices decreased -5.0 percent and -10.0 percent when compared to the same period one year earlier. Dairy Product prices increased 3.5 percent over the preceding quarter and 6.1 percent when compared to the same period one year earlier. Other Meats product prices shows an increase of 32.1 percent over the preceding quarter and 30.3 percent when compared to same period one year earlier.

The Housing group index of 119.7 shows an increase of 0.3 percent over the preceding quarter and 1.0 percent when compared to the same period one year earlier. Rent and Lodging prices increased 1.0 percent over the preceding quarter and 1.6 percent when compared to the same period one year earlier. Electricity prices saw no changes over the preceding quarter and the same period one year earlier. Water, Sewer and Trash prices shows no changes over the preceding quarter but increased 3.5 percent when compared to the same period one year earlier.

The Transportation group index of 103.9 shows a decrease of -3.8 percent over the preceding quarter and -2.2 percent when compared to the same period one year earlier. New Car prices shows a decrease of -5.3 percent over the preceding quarter and -4.0 percent when compared to the same period one year earlier. Motor Fuel prices decreased -3.6 percent over the preceding quarter and increased 1.2 percent when compared to the same period one year earlier.

The Apparel and Upkeep group index of 84.4 shows a decrease of -1.4 percent, the Medical Care group index of 179.3 shows an increase of 0.1 percent, the Recreation group index of 125.6 percent shows an increase of 1.4 percent, and the Other Goods and Services group index of 132.1 shows an increase of 1.2 percent over the preceding quarter. The Education and Communication group index of 109.0 shows a decrease of -0.4 percent over the preceding quarter.

**TABLE A**  
**CONSUMER PRICE INDEX**  
(1st Qtr. 2007 = 100.00)

GROUP	CY 2019 QUARTERS				CY 2020 QUARTERS			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>ALL ITEMS</b>	130.1	131.6	131.8	132.9	133.5			
FOOD	146.5	145.6	141.8	144.9	149.2			
HOUSING	118.5	119.4	119.3	119.3	119.7			
APPAREL & UPKEEP	81.9	83.4	83.5	85.6	84.4			
TRANSPORTATION	106.2	107.8	107.5	108.0	103.9			
MEDICAL CARE	172.6	177.3	177.3	179.2	179.3			
RECREATION	124.2	123.4	123.9	123.9	125.6			
EDUCATION & COMMUNICATION	108.0	109.8	109.9	109.4	109.0			
OTHER GOODS & SERVICES	120.2	121.4	129.4	130.5	132.1			
<b>SPECIAL INDEXES</b>								
ALL ITEMS LESS FOOD	127.1	129.0	129.9	130.7	130.6			
ENERGY <sup>1</sup>	117.1	118.6	118.6	118.7	117.2			
ALL ITEMS LESS FOOD AND ENERGY	131.1	133.2	134.4	135.5	136.0			
COMMODITIES LESS FOOD	104.9	106.1	108.2	108.9	108.4			
SERVICES	144.8	147.4	147.4	148.2	148.4			
ALL ITEMS LESS HOSPITAL REL'D SV	119.9	120.5	120.7	122.0	122.7			
Purchase Power of Consumer								
Dollar (3rd Qtr. 1996 = 100.00)	.52	.52	.52	.51	.51			
Dollar (4th Qtr. 2007 = 100.00)	.77	.76	.76	.75	.75			

FOOTNOTE: "1" Index items selected by the Guam Energy Office

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
**CONSUMER PRICE INDEX**  
(1st Qtr. 2007 = 100.00)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
All Items	100.00	130.1	132.9	133.5	0.5%	2.6%
All Items Less Food	84.41	127.1	130.7	130.6	-0.1%	2.8%
Energy <sup>1</sup>	24.09	117.1	118.7	117.2	-1.3%	0.1%
All Items Less Food and Energy	60.32	131.1	135.5	136.0	0.4%	3.7%
Commodities Less Food	37.54	104.9	108.9	108.4	-0.4%	3.4%
Services	46.86	144.8	148.2	148.4	0.2%	2.5%
All Items Less Hospital Rel'd S	90.62	119.9	122.0	122.7	0.5%	2.3%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>Food</b>	15.60	146.5	144.9	149.2	3.0%	1.8%
Cereals and Cereal Products	1.37	143.6	142.1	150.5	5.9%	4.8%
Bakery Products	0.47	145.6	145.1	147.3	1.5%	1.2%
Beef	1.57	156.0	154.6	159.8	3.4%	2.4%
Pork	1.10	136.6	133.9	130.6	-2.5%	-4.4%
Other Meats	0.73	160.7	158.5	209.4	32.1%	30.3%
Poultry	2.20	147.1	153.0	150.4	-1.7%	2.2%
Fish and Seafood	1.19	158.6	148.9	143.3	-3.8%	-9.6%
Eggs	0.26	148.6	140.8	133.7	-5.0%	-10.0%
Dairy Products	0.70	138.3	141.8	146.7	3.5%	6.1%
Fresh Fruits	0.71	141.9	132.4	142.8	7.9%	0.6%
Fresh Vegetables	1.01	126.1	118.9	125.8	5.8%	-0.2%
Juice and Non-Alcoholic Drink:	1.53	138.2	135.8	138.0	1.6%	-0.1%
Sugar and Sweets	0.25	167.1	167.1	173.0	3.5%	3.5%
Fats and Oils	0.13	135.3	147.7	154.5	4.6%	14.2%
Other Foods	1.47	158.3	156.8	159.6	1.8%	0.8%
Meals Away from Home	0.66	143.2	144.5	144.5	0.0%	0.9%
Alcoholic Beverages	0.25	132.2	135.2	135.0	-0.1%	2.1%

FOOTNOTE: "1" Index items selected by the Guam Energy Office

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
(continued)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>HOUSING</b>	32.11	118.5	119.3	119.7	0.3%	1.0%
Rent and Lodging	5.13	105.7	106.3	107.4	1.0%	1.6%
Home Fuel	3.22	134.9	134.9	134.9	0.0%	0.0%
Electricity	8.09	116.2	116.2	116.2	0.0%	0.0%
Water, Sewer and Trash	3.37	150.2	155.4	155.4	0.0%	3.5%
Floor Coverings	0.17	92.1	97.8	97.8	0.0%	6.2%
Furniture and Bedding	0.75	53.1	53.8	54.0	0.4%	1.7%
Appliances	0.93	111.3	117.5	117.0	-0.4%	5.1%
Tools, Hardware, Outdoor Equ	0.91	113.8	111.3	111.7	0.4%	-1.8%
Housekeeping Supplies	7.95	112.3	112.1	112.8	0.6%	0.4%
Housekeeping Operations	1.58	143.3	143.3	144.1	0.6%	0.6%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>APPAREL &amp; UPKEEP</b>	7.61	81.9	85.6	84.4	-1.4%	3.1%
Men's Apparel	2.09	98.5	100.8	101.5	0.7%	3.0%
Boy's Apparel	0.54	93.8	90.2	90.2	0.0%	-3.8%
Women's Apparel	2.03	86.6	95.7	91.2	-4.7%	5.3%
Girl's Apparel	0.33	80.1	81.1	80.1	-1.2%	0.0%
Footwear	1.37	35.2	38.5	38.6	0.3%	9.7%
Infant's & Toddler's Apparel	0.38	102.8	106.9	104.8	-2.0%	1.9%
Jewelry	0.87	89.4	89.4	89.4	0.0%	0.0%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

**TABLE B**  
(continued)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>TRANSPORTATION</b>	8.6	106.2	108.0	103.9	-3.8%	-2.2%
New Cars	5.2	106.2	107.7	102.0	-5.3%	-4.0%
Motor Fuel	1.4	107.0	112.3	108.3	-3.6%	1.2%
Car Maintenance	1.0	116.7	116.7	116.7	0.0%	0.0%
Car Insurance	1.0	94.7	94.7	94.7	0.0%	0.0%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>MEDICAL CARE</b>	20.42	172.6	179.2	179.3	0.1%	3.9%
Prescription Drugs	0.67	141.5	141.5	145.4	2.8%	2.8%
Physician Services	2.07	194.9	194.9	194.9	0.0%	0.0%
Other Medical Practitioner Cos	0.47	157.2	157.2	157.2	0.0%	0.0%
Hospital and Related Services	17.22	171.5	179.4	179.4	0.0%	4.6%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from	
					Previous Quarter	One Year Earlier
<b>RECREATION</b>	2.97	124.2	123.9	125.6	1.4%	1.1%
Audio and Video	2.63	121.8	121.8	123.0	1.0%	1.0%
Pet and Pet Products	0.19	147.8	142.4	153.7	7.9%	4.0%
Sporting Goods	0.14	137.0	136.9	134.4	-1.8%	-1.9%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam



**TABLE B**  
(continued)

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from Previous Quarter      One Year Earlier	
<b>EDUCATION &amp; COMMUNICATION</b>	2.77	108.0	109.4	109.0	-0.4%	0.9%
Educational Books & Supplies	0.18	128.4	128.4	128.4	0.0%	0.0%
Tuition & Other School Fees	0.38	115.5	116.5	116.5	0.0%	0.9%
Telephone Services	1.48	105.1	107.2	107.2	0.0%	2.0%
Computers	0.34	88.8	90.2	86.7	-3.9%	-2.4%
Internet Services	0.39	118.8	118.8	118.8	0.0%	0.0%

GROUP	Relative Importance	Index	Index	Index	% Change to	
		for 1st Qtr. CY 2019	for 4th Qtr. CY 2019	for 1st Qtr. CY 2020	1st Qtr. 2020 from Previous Quarter      One Year Earlier	
<b>OTHER GOODS &amp; SERVICES</b>	9.92	120.2	130.5	132.1	1.2%	9.9%
Tobacco Products	1.04	247.3	244.2	246.5	0.9%	-0.3%
Personal Care Products	5.36	85.0	104.5	107.0	2.4%	25.9%
Personal Care Services	0.66	133.6	133.6	133.6	0.0%	0.0%
Miscellaneous Personal Services	0.16	170.0	176.7	176.7	0.0%	3.9%
Funeral Expenses	0.93	126.8	126.8	126.8	0.0%	0.0%
Financial Services	0.47	128.8	128.8	128.8	0.0%	0.0%
Other Special Occasions	1.31	142.9	142.9	142.9	0.0%	0.0%

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam

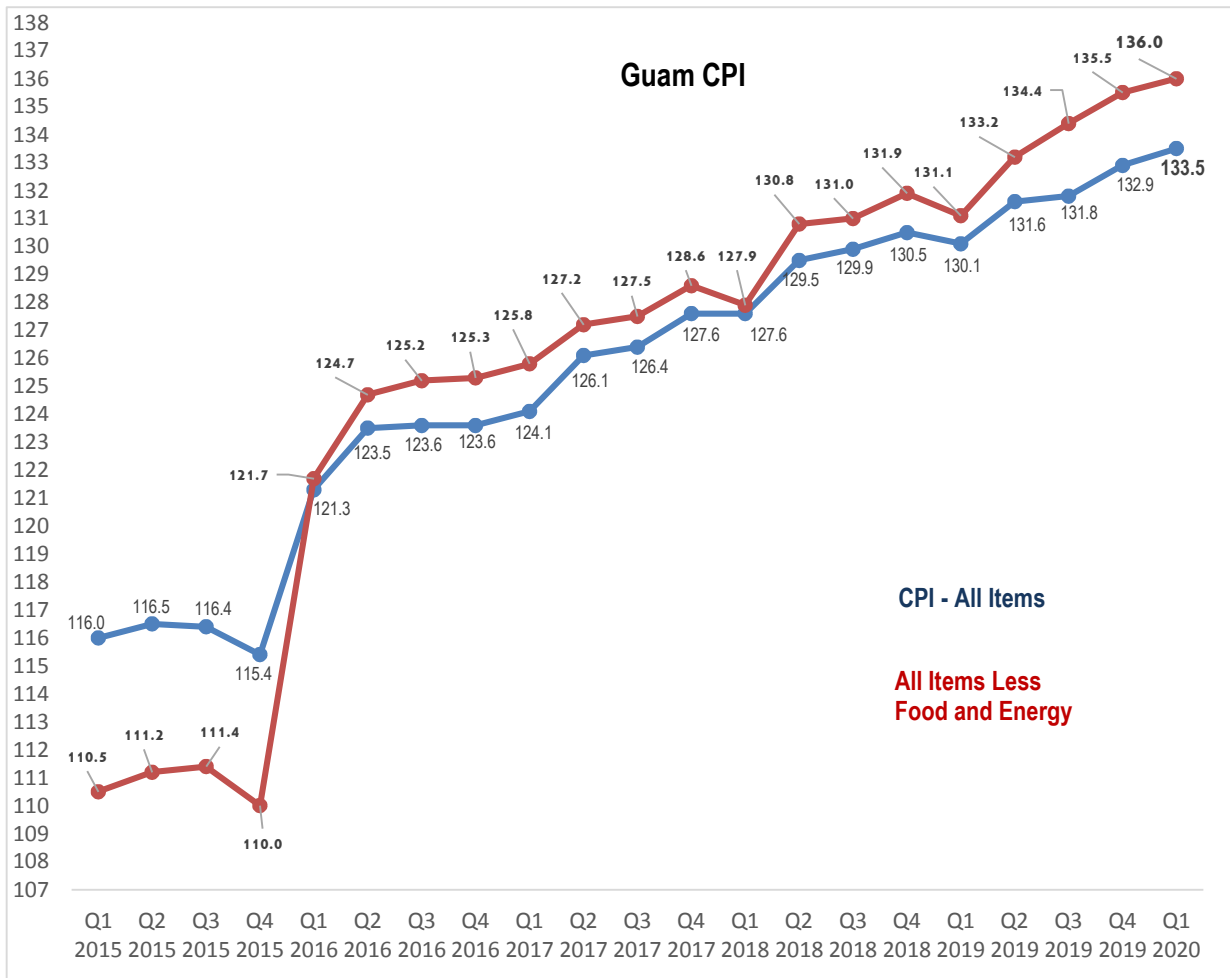
**TABLE C**  
**CONSUMER PRICE INDEX (CPI)**  
(1st Qtr. 2007 = 100.00)

Rebased Indexes<sup>2</sup>, Average Annual Percent Change

Calendar Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual Average	Average Annual Percent Change
2003	70.3	72.3	72.7	73.5	72.2	2.7%
2004	74.7	76.0	77.1	78.6	76.6	6.1%
2005	79.3	80.9	81.5	88.1	82.5	7.7%
2006	88.8	91.3	92.4	95.5	92.0	11.6%
2007	97.2	98.1	97.6	100.0	98.2	6.8%
2008	101.1	104.1	106.0	106.1	104.3	6.2%
2009	105.6	105.4	106.9	106.5	106.1	1.7%
2010	107.8	108.9	109.4	110.6	109.2	2.9%
2011	109.8	112.9	113.3	115.0	112.8	3.3%
2012	116.0	116.4	116.6	116.3	116.3	3.2%
2013	116.8	117.0	115.5	115.8	116.3	0.0%
2014	116.4	117.1	117.2	117.9	117.2	0.8%
2015	116.0	116.5	116.4	115.4	116.1	-0.9%
2016	121.3	123.5	123.6	123.6	123.0	6.0%
2017	124.1	126.1	126.4	127.6	126.1	2.5%
2018	127.6	129.3	129.9	130.5	129.3	2.6%
2019	130.1	131.6	131.8	132.9	131.6	1.8%
2020	133.5					

FOOTNOTE: "2" See page (i) Example II, for the discussion on rebasing indexes.

SOURCE: Cost of Living Section, Business and Economic Statistics Program, Bureau of Statistics and Plans, Government of Guam





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