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# ***GUAM CONSUMER PRICE INDEX***

Cost of Living Section

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## **Bureau of Statistics and Plans Business and Economic Statistics Program Government of Guam**

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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 persons 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 US Department of Interior to the US Census Bureau, and is similar in design with the US CPI.

The 2008 CPI is measured from a total of 165 items from 8 major groups, and indices are computed at two different levels of aggregation. More than 1,050 price quotations are collected during the middle month of each quarter either by telephone or on-site survey by qualified price enumerators. There are approximately 230 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 groups and subgroups, and special indexes from consecutive quarters to one year earlier. An annual average and annualized inflation rate are also reported. In 2009, the report format may change given a complete 4-quarter observation of price changes among all groups and subgroups.

**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 increased by 10.7% from the based period of 100.0. It does not mean a 10.7% change from the immediately preceding period as shown in Example 1:

**Example 1:**

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

Any period, such as the 2<sup>nd</sup> 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 2:**

Period:	1 <sup>st</sup> Qtr. (base period)	2 <sup>nd</sup> Qtr.	3 <sup>rd</sup> Qtr.
Index:	100.0	108.4	110.7
Period:		2 <sup>nd</sup> Qtr. (base period)	3 <sup>rd</sup> 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:**

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

$P_n$	= equivalent annual rate
$P_o$	= base index (100.0)
$i$	= current rate (1.0%)
$n$	= number of periods (4)
Thus, 104.1	= $100.0 (1 + .01)^4$

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 <sup>4</sup>	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 and Communication	2.77	6
Other Goods & Services	<u>9.92</u>	<u>11</u>
	<u>100.0</u>	<u>165</u>

2. Base period: 4<sup>th</sup> Quarter 2007 = 100

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)**  
**1<sup>st</sup> Quarter 2008**  
**Volume No. XXXIV, 1**

The Guam 2008 Consumer Price Index (CPI) is reported based on the 4<sup>th</sup> quarter 2007 index of 100.0, and is of similar design and makeup of the US CPI. Given a new market basket, groups, subgroups and relative expenditure weights, there are limitations in making historical comparisons at this time.

The Guam 2008 1<sup>st</sup> Quarter CPI of 101.1 shows a 1.1 percent increase over the previous quarter, and an increase of 4.0 percent when compared to the same period one year earlier. The All Items Less Food index rose by 1.1 percent, Energy by 2.7 percent, and All Items Less Food and Energy by 0.5 percent, as compared to the previous quarter. The purchasing power of the dollar is now \$0.67 when compared to base year 1996, and \$0.99 in 2007. Given a 1.1 percent price increase, the annualized inflation rate is 4.5 percent.

The Food group index of 101.2 shows an increase of 1.2 percent over the preceding quarter and 3.2 percent when compared to the same period one year earlier. Beef product prices have decreased 0.3 percent over the preceding quarter yet increased by 21.1 percent when compared to the same period one year earlier. Poultry product prices have decreased 3.1 percent over the preceding quarter yet increased by 33.7 percent when compared to the same period one year earlier. Fish and Seafood product prices have increased by 8.5 percent over the preceding quarter and 19.6 percent when compared to the same period one year earlier. Egg prices have increased by 22.4 percent over the preceding quarter.

The Housing group index of 101.0 shows an increase of 1.0 percent over the preceding quarter and 5.0 percent when compared to the same period one year earlier. Rent and Lodging prices have not changed over the preceding quarter yet have increased by 1.9 percent when compared to the same period one year earlier. Appliances prices have increased by 1.2 percent over the preceding quarter and 8.2 percent when compared to the same period one year earlier. Housekeeping Supplies prices have decreased by 0.3 over the preceding quarter and 1.4 percent when compared to the same period one year earlier. Home Fuel has increased by 9.7 percent when compared to the same period one year earlier.

The Transportation group index of 103.6 shows an increase of 3.6 percent over the preceding quarter and 10.8 percent when compared to the same period one year earlier. Motor Fuel prices increased 7.5 percent over the preceding quarter and 32.2 percent when compared to the same period one year earlier.

The Apparel group index of 100.9, Medical Care group index of 100.8, Recreation group index of 101.4, Education and Communication group index of 100.1 and Other Goods and Services group index of 100.2, shows an increase of 0.9, 0.8, 1.4, 0.1 and 0.2 percent over the preceding quarter, respectively.

Over 90 percent of all price observations across all groups and subgroups are included in this report.

**TABLE A**  
**CONSUMER PRICE INDEX**  
(4th Qtr. 2007 = 100.00)

GROUP	CY 2007 QUARTERS				CY 2008 QUARTERS			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
<b>ALL ITEMS</b>	97.2	98.1	97.6	100.0	101.1			
FOOD	98.1	98.1	96.8	100.0	101.2			
HOUSING	96.2	98.0	98.1	100.0	101.0			
APPAREL & UPKEEP	96.2	99.2	94.3	100.0	100.9			
TRANSPORTATION	93.5	95.0	95.4	100.0	103.6			
MEDICAL CARE	99.4	99.4	99.6	100.0	100.8			
RECREATION	<sup>1</sup>	<sup>1</sup>	<sup>1</sup>	100.0	101.4			
EDUCATION & COMMUNICATION	<sup>1</sup>	<sup>1</sup>	<sup>1</sup>	100.0	100.1			
OTHER GOODS & SERVICES	95.3	95.0	99.8	100.0	100.6			
<b>SPECIAL INDEXES</b>								
ALL ITEMS LESS FOOD	96.9	97.6	98.0	100.0	101.1			
ENERGY <sup>2</sup>	<sup>1</sup>	<sup>1</sup>	<sup>1</sup>	100.0	102.7			
ALL ITEMS LESS FOOD AND ENERGY	<sup>1</sup>	<sup>1</sup>	<sup>1</sup>	100.0	100.5			
Purchase Power of Consumer								
Dollar (3rd Qtr. 1996 = 100.00)	.69	.69	.69	.68	.67			
Dollar (4th Qtr. 2007 = 100.00)				1.00	.99			

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

FOOTNOTE: "2" 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**  
**(4th Qtr. 2007 = 100.00)**

GROUP	Relative Importance	Index for 1st Qtr. CY 2007	Index for 4th Qtr. CY 2007	Index for 1st Qtr. CY 2008	% Change to 1st Qtr. 2008 from Previous Quarter One Year Earlier	
<b>All Items</b>	100.00	97.2	100.0	101.1	1.1%	4.0%

GROUP	Relative Importance	Index for 1st Qtr. CY 2007	Index for 4th Qtr. CY 2007	Index for 1st Qtr. CY 2008	% Change to 1st Qtr. 2008 from Previous Quarter One Year Earlier	
<b>Food</b>	15.60	98.1	100.0	101.2	1.2%	3.2%
Cereals and Cereal Products	1.37	98.2	100.0	101.2	1.2%	3.1%
Bakery Products	0.47	95.8	100.0	100.8	0.8%	5.2%
Beef	1.57	82.3	100.0	99.7	-0.3%	21.1%
Pork	1.10	88.5	100.0	99.5	-0.5%	12.4%
Other Meats	0.73	100.7	100.0	101.5	1.5%	0.8%
Poultry	2.20	72.5	100.0	96.9	-3.1%	33.7%
Fish and Seafood	1.19	90.7	100.0	108.5	8.5%	19.6%
Eggs	0.26	<sup>1</sup>	100.0	122.4	22.4%	<sup>1</sup>
Dairy Products	0.70	100.9	100.0	99.0	-1.0%	-1.9%
Fresh Fruits	0.71	109.3	100.0	109.7	9.7%	0.4%
Fresh Vegetables	1.01	116.1	100.0	99.2	-0.8%	-14.6%
Juice and Non-Alcoholic Drinks	1.53	<sup>1</sup>	100.0	100.7	0.7%	<sup>1</sup>
Sugar and Sweets	0.25	97.0	100.0	97.8	-2.2%	0.8%
Fats and Oils	0.13	102.0	100.0	99.9	-0.1%	-2.1%
Other Foods	1.47	95.5	100.0	101.9	1.9%	6.7%
Meals Away from Home	0.66	97.6	100.0	100.4	0.4%	2.9%
Alcoholic Beverages	0.25	100.0	100.0	102.1	2.1%	2.1%

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

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 for 1st Qtr. CY 2007	Index for 4th Qtr. CY 2007	Index for 1st Qtr. CY 2008	% Change to 1st Qtr. 2008 from Previous Quarter	One Year Earlier
<b>HOUSING</b>	32.11	96.2	100.0	101.0	1.0%	5.0%
Rent and Lodging	5.13	98.1	100.0	100.0	0.0%	1.9%
Home Fuel	3.22	1	100.0	109.7	9.7%	1
Electricity	8.09	1	100.0	100.0	0.0%	1
Water, Sewer and Trash	3.37	1	100.0	100.0	0.0%	1
Floor Coverings	0.17	1	100.0	100.1	0.1%	1
Furniture and Bedding	0.75	91.4	100.0	101.0	1.0%	10.5%
Appliances	0.93	93.5	100.0	101.2	1.2%	8.2%
Tools, Hardware, Outdoor Equipment	0.91	1	100.0	100.2	0.2%	1
Housekeeping Supplies	7.95	101.1	100.0	99.7	-0.3%	-1.4%
Housekeeping Operations	1.58	97.0	100.0	100.7	0.7%	3.8%

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

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 for 1st Qtr. CY 2007	Index for 4th Qtr. CY 2007	Index for 1st Qtr. CY 2008	% Change to 1st Qtr. 2008 from Previous Quarter One Year Earlier	
<b>APPAREL &amp; UPKEEP</b>	7.61	101.6	100.0	100.9	0.9%	-0.7%
Men's Apparel	2.09	110.6	100.0	99.4	-0.6%	-10.1%
Boy's Apparel	0.54	81.7	100.0	93.1	-6.9%	14.0%
Women's Apparel	2.03	98.9	100.0	103.9	3.9%	5.1%
Girl's Apparel	0.33	99.9	100.0	99.4	-0.6%	-0.5%
Footwear	1.37	100.0	100.0	94.6	-5.4%	-5.4%
Infant's & Toddler's Apparel	0.38	96.5	100.0	99.5	-0.5%	3.1%
Jewelry	0.87	<sup>1</sup>	100.0	113.9	13.9%	<sup>1</sup>

GROUP	Relative Importance	Index for 1st Qtr. CY 2007	Index for 4th Qtr. CY 2007	Index for 1st Qtr. CY 2008	% Change to 1st Qtr. 2008 from Previous Quarter One Year Earlier	
<b>TRANSPORTATION</b>	8.6	93.5	100.0	103.6	3.6%	10.8%
New Cars	5.2	98.9	100.0	103.8	3.8%	5.0%
Motor Fuel	1.4	81.3	100.0	107.5	7.5%	32.2%
Car Maintenance	1.0	<sup>1</sup>	100.0	100.0	0.0%	<sup>1</sup>
Car Insurance	1.0	<sup>1</sup>	100.0	100.2	0.2%	<sup>1</sup>

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

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 for	Index for	Index for	% Change to	
		1st Qtr. CY 2007	4th Qtr. CY 2007	1st Qtr. CY 2008	1st Qtr. 2008 from Previous Quarter	One Year Earlier
<b>MEDICAL CARE</b>	20.42	99.4	100.0	100.8	0.8%	1.4%
Prescription Drugs	0.67	100.0	100.0	107.4	7.4%	7.4%
Physician Services	2.07	96.9	100.0	102.9	2.9%	6.2%
Other Medical Practitioner Costs	0.47	100.0	100.0	110.4	10.4%	10.4%
Hospital and Related Services	17.22	<sup>1</sup>	100.0	100.0	0.0%	<sup>1</sup>

GROUP	Relative Importance	Index for	Index for	Index for	% Change to	
		1st Qtr. CY 2007	4th Qtr. CY 2007	1st Qtr. CY 2008	1st Qtr. 2008 from Previous Quarter	One Year Earlier
<b>RECREATION</b>	2.97	<sup>1</sup>	100.0	101.4	1.4%	<sup>1</sup>
Audio and Video	2.63	107.9	100.0	101.4	1.4%	-6.0%
Pet and Pet Products	0.19	<sup>1</sup>	100.0	103.2	3.2%	<sup>1</sup>
Sporting Goods	0.14	<sup>1</sup>	100.0	100.0	0.0%	<sup>1</sup>

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

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 for	Index for	Index for	% Change to	
		1st Qtr. CY 2007	4th Qtr. CY 2007	1st Qtr. CY 2008	1st Qtr. 2008 from Previous Quarter	One Year Earlier
<b>EDUCATION &amp; COMMUNICATION</b>	2.77	1	100.0	100.1	0.1%	1
Educational Books & Supplies	0.18	1	100.0	100.0	0.0%	1
Tuition & Other School Fees	0.38	1	100.0	100.0	0.0%	1
Telephone Services	1.48	1	100.0	99.7	-0.3%	1
Computers	0.34	1	100.0	101.6	1.6%	1
Internet Services	0.39	1	100.0	100.0	0.0%	1

GROUP	Relative Importance	Index for	Index for	Index for	% Change to	
		1st Qtr. CY 2007	4th Qtr. CY 2007	1st Qtr. CY 2008	1st Qtr. 2008 from Previous Quarter	One Year Earlier
<b>OTHER GOODS &amp; SERVICES</b>	9.92	95.3	100.0	100.2	0.2%	5.1%
Tobacco Products	1.04	100.2	100.0	100.0	0.0%	-0.2%
Personal Care Products	5.36	98.7	100.0	99.9	-0.1%	1.2%
Personal Care Services	0.66	100.0	100.0	100.0	0.0%	0.0%
Miscellaneous Personal Services	0.16	1	100.0	90.0	-10.0%	1
Funeral Expenses	0.93	1	100.0	101.3	1.3%	1
Financial Services	0.47	1	100.0	104.9	4.9%	1
Other Special Occasions	1.31	1	100.0	100.0	0.0%	1

FOOTNOTE: "1" No comparable indexes are available between the former and current CPI.

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

**TABLE C**  
**CONSUMER PRICE INDEX (CPI)**  
**(4th Qtr. 2007 = 100.00)**

Calendar Year	Rebased Indexes <sup>4</sup> , Average Annual Percent Change					Annual Average	Average Annual Percent Change
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Annual Average		
1996	66.0	67.5	67.6	68.2	67.3		
1997	68.8	68.6	68.2	68.9	68.6	1.9%	
1998	69.0	68.0	67.9	67.7	68.2	-0.6%	
1999	68.6	68.9	70.1	70.2	69.4	1.8%	
2000	71.2	71.4	70.4	70.2	70.8	2.0%	
2001	70.6	70.4	69.2	69.1	69.8	-1.4%	
2002	69.8	69.8	70.0	71.5	70.3	0.6%	
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 <i>Inflation Rate</i> <sup>3</sup>	101.1 4.50%						

FOOTNOTE: "3" See page (i) Example III, for the discussion on computing the annualized inflation rate.

FOOTNOTE: "4" 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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