

REPUBLIC OF THE MARSHALL ISLANDS

CONSUMER PRICE INDEX



**Economic Policy, Planning and Statistics Office
Office of the President**

**2 March, 2009
1st Quarter
Majuro and Ebeye, RMI**

CPI Construction and Methodology

Survey Overview:

Over a 2-month period from April to May 2002, the Office of Planning and Statistics, which was renamed the Economic Policy, Planning and Statistics Office (EPPSO), of the Republic of the Marshall Islands (RMI), conducted a Household Income and Expenditure Survey (HIES) from April 1 until mid-May. The staff selected four sample areas of Majuro, Ebeye, Jaluit and Likiep. The selection of these sample areas was judgmental and was based on choosing the largest population centers (Majuro and Ebeye) and then two other areas that were logistically feasible to reach in conducting the survey and were in the middle of the islands that were ranked by population.

This survey used two types of survey methods to gather data. For the more expensive and less frequently purchased items, such as major appliances, electronic goods, new and used vehicles, etc., a pre-printed, survey questionnaire was completed by an interviewer. For those items, which are more frequently purchased, such as food, tobacco, drinks, etc., the household respondent was given a diary to record all purchases during a one-week period.

Household Sample:

A total sample size of 700 in all four areas was used for the questionnaire portion of the survey. Remarkably, a total of 657 households agreed to participate. For any country getting such a high participation rate is an enviable achievement. For the diary portion of the survey, 355 households participated.

Selection of the Item Sample:

In the summer of 2002, staff members of the U.S. Bureau of the Census International Program's Center processed the RMI's HIES data. These items and expenditures were arrayed using the U.S. Bureau of Labor Statistics CPI classification system as a frame of reference. Then, using a statistical technique called "Probability Proportionate to Size"; a new item sample was selected. Using the PPS technique to select the item sample ensured that those items with the highest monthly household expenditures were selected in the sample. The sample included a total of 61 items compared in the revised CPI.

Expanding the Major Groups:

Using the BLS Classification System as a frame of reference allowed the EPPSO to expand the number of groups included in the RMI's CPI. Instead of having four major groups, the revised CPI now has 9 major groups. Having more groups allows the users to understand better which groups are responsible for the increases/decreases of the CPI. In the previous CPI, for example, alcoholic beverages were a part of the Food Group. Now, it is one of the 5 new groups. The others are: Housing, Utilities and Appliances, Medical Care, Education and Communication and Other Goods and Services.

Expansion of the Outlet Sample:

The previous CPI collected price data from 4 different outlets. In the revised CPI, the number of retail outlets has been expanded by more than ten-fold and the outlet sample now consists of

46 different retail outlets. These are more diversified and geographically dispersed throughout Majuro. This substantially larger outlet sample ensures that the EPPSO collects retail price data from a wide variety of outlets.

Data Collection and Price Review Manual:

The EPPSO has made another enhancement to the CPI by increasing the data collection training and by formalizing this vital aspect of price collection by developing a Data Collection Manual. This new manual covers virtually all aspects of price collection ranging from initiating the retail outlet to the rules for selecting a retail item and re-pricing. This new manual will improve data collection quality because it will provide guidance to the data collectors in handling almost any type of re-pricing situation.

Linking the Old and New CPIs:

In the 1st Quarter of 2003, data collectors collected price data for both the old and revised CPIs and the two indexes were “spliced” together at that point. In order for two indexes to be linked together, there must be at least one period where prices are collected for both the old and the new indexes. Beginning in the 2nd Quarter 2003, the EPPSO collected price data for only the items in the revised CPI. From the 4th Quarter 2002 to the 1st Quarter 2003, the price change was based on the previous CPI; from the 1st to the 2nd Quarters 2003, the price movement reflected the change in prices for revised CPI.

Changing the Base Period:

Another change in the CPI was rebasing it from 1982 = 100 to the 1st Quarter 2003 = 100. This is a mathematical change in the CPI but the more recent base period will make the CPI easier for users to understand. There is virtually no difference in the percent changes from the old CPI from one period to another and the same indexes on the base period.

Calculating the Consumer Price Index

As with most CPIs around the world, the EPPSO will continue to use the Laspeyres method to calculate the CPI. This is the most widely used and internationally accepted method of calculating price change for a CPI. The Laspeyres formula is shown below:

Laspeyres Formula:

$$I_n = \left(\frac{\sum_{i=1}^n p_i q_0}{\sum_{i=1}^n p_0 q_0} \right) \times 100$$

where,

I_n = Price Index in period n

$\sum_{i=1}^n p_i q_0$ = the costs of a market basket of goods and services in period n

$\sum_{i=1}^n p_0 q_0$ = the costs of a market basket of goods and services in the base period

$i = 1$

p = price of the good or service

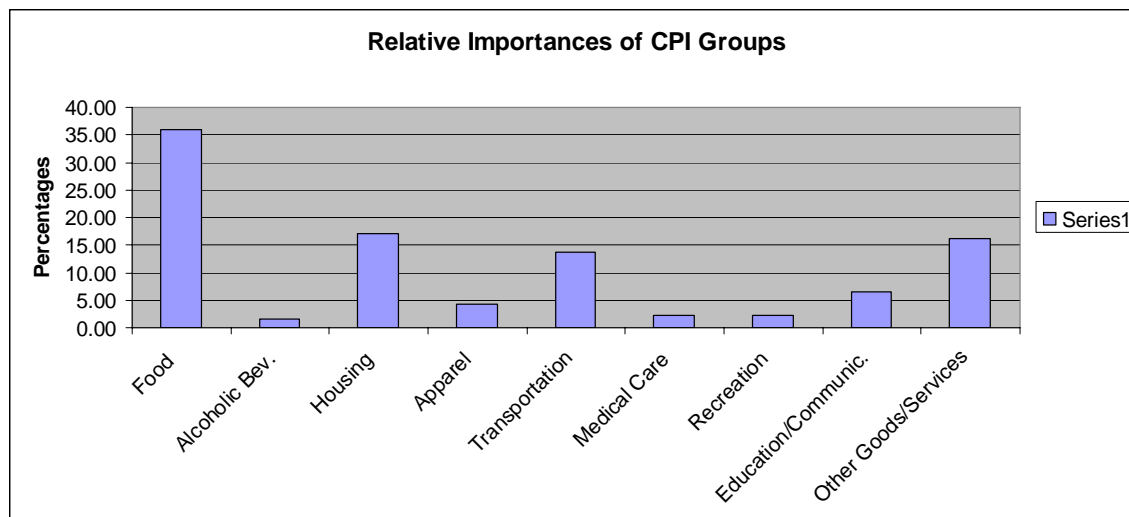
q = quantity of the good or service

i = index for the good or service (where i goes from 1, ..., n)

This method of index computation uses the quantities of commodities purchased in the base period as the basis for computing the value of the “market basket.” First, there are n number of items in the market basket with each having a base quantity. Each of these items has a base price, p_0 and current price, p_i . Multiplying p_0 with q_0 gives the total expenditure for a particular commodity for the base period. Current expenditure for an item is obtained by multiplying p_i with q_0 . The sum of current expenditures for all items in the market basket is expressed as $\sum p_i q_0$, while the sum $\sum p_0 q_0$ is the total market basket expenditures in the base period. Notice that in both summations the term q_0 remains constant, which means by using the same quantities only price changes are reflected in two pricing periods.

For those unfamiliar with statistical notation, trying to read and understand the above explanation can be an intimidating experience. In layman’s terms, the above simply means that all of the 61 items in the CPI are priced every pricing quarter and the prices for each item in the current quarter are compared to the same prices in the base period. The base period is the 1st quarter 2003 when the CPI was set equal to 100. That is when the CPIs for each of the 9 major groups and the All Items = 100.

In actuality, the EPPSO uses a slight variation to this formula. Each month, the sums of the prices that are collected for each item are compared to the sums of the same prices in the previous quarter – not the base period. The sum of the prices of an item in the current quarter is divided by the sum of the prices in the previous quarter to calculate a price relative. This price relative is multiplied by the item’s weight in the previous quarter to update the item’s weight in the current quarter. This product is then divided by the item’s weight in the base period to calculate an item’s CPI. By summing the updated weights for all of the items in a group and dividing that sum by the same weights in the base period will calculate the group’s current CPI.



1st Quarter 2009 CPI for Majuro

There was a decline of (6.32%) during the first quarter of 2009, so over the last two quarters there has been a decline of 15.12% in the CPI. Current price levels are comparable to the 1st quarter of 08, just before the RMI was hit by extreme increases for food and fuel prices. Over the last four quarters the CPI has increased by 7.21%, but this has involved very large positive and negative movements in prices each of these quarters.

Food Group

There was only a small decrease of 1.11% in the last quarter. A 20 – pound bag of rice increased by 14 cents to \$15.12, while a 20 – pound bag of flour dropped from \$17.97 to \$17.14. There were also small declines for most individual food items.

Alcoholic Beverages Group

There was no change in this group over the quarter.

Housing, Utilities, and Major Appliances Group

This group had a significant decrease from 197.01 to 157.51 in due to declines in the cost of electricity and kerosene, representing a 20% decrease in this group. This is from a high of 230.26 in Q3 2008. Electricity moved down from \$115.50 to \$84 and kerosene from \$6.98 to \$6.49 in this quarter.

Apparel Group

There was a 2.47% decrease in this group over the quarter, due to decreases in men's/boys clothing and shirts men/women.

Transportation Group

There was a 6.47% decrease in this group because of gas dropping from \$5.81 to \$5.04 a gallon and a slight decrease in the average plane fare to Honolulu.

Medical Care and Education/Communication Groups

There was no change in this group over the quarter..

Recreation Group

There was a very slight decline of (.06%) this quarter.

Education and Communications

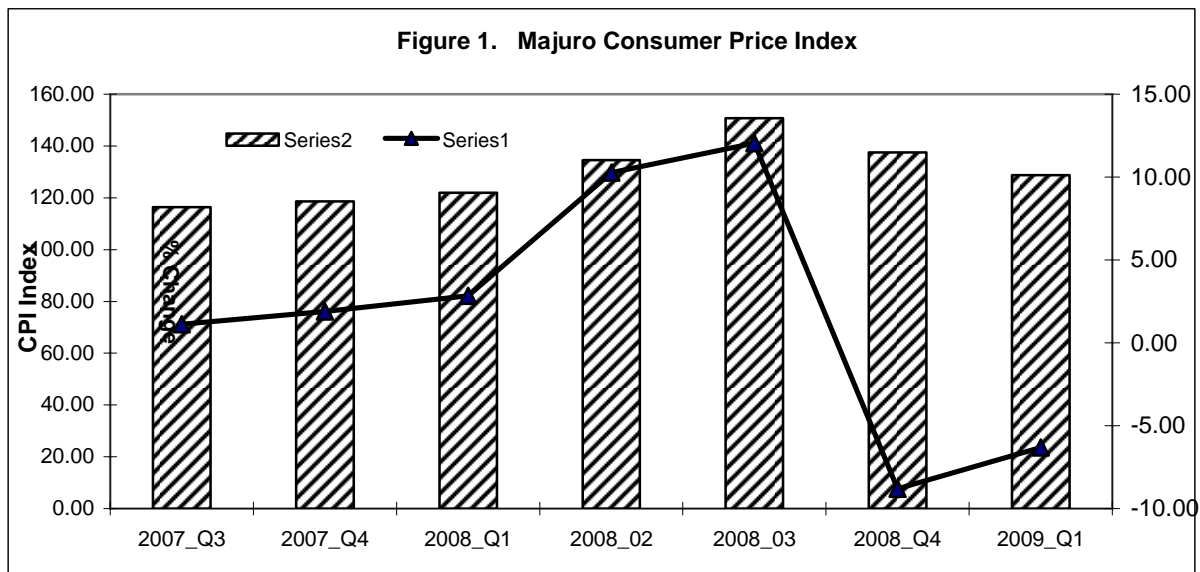
There was no change in this group over the quarter.

Other Goods and Services Group

There was a small increase of 0.88% in this group. A slight increase in price of toilet paper accounted for this change.

Majuro Consumer Price Index by Major Group, 2007_Q3 to 2009_Q1

	2007_Q3	2007_Q4	2008_Q1	2008_Q2	2008_Q3	2008_Q4	2009_Q1
All Group	116.41	118.61	121.98	134.51	150.73	137.46	128.77
Food	109.20	112.60	113.30	126.03	143.21	136.37	134.86
Alcoholic Beveraes	136.24	136.24	136.97	138.26	134.47	143.79	143.79
Housing, Utilities and Major Appliances	142.28	143.46	148.42	192.26	230.26	197.01	157.51
Apparel	103.11	105.33	113.13	104.02	108.12	108.42	105.74
Transportation	138.60	141.53	152.97	159.43	196.93	158.22	147.98
Medical Care	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Recreation	85.64	83.74	83.74	83.74	85.61	83.01	82.95
Education and Comm.	115.90	115.90	115.90	115.90	117.13	117.13	117.13
Other Good and Services	94.69	96.68	98.73	98.57	87.23	87.66	88.44
Percent Change							
All Group	1.11	1.89	2.83	10.28	12.05	-8.80	-6.32
Food	-2.52	3.12	0.62	11.23	13.63	-4.77	-1.11
Alcoholic Beverages	1.41	0.00	0.54	0.94	-2.74	6.93	0.00
Housing, Utilities and Major Appliances	9.56	0.83	3.46	29.53	19.77	-14.44	-20.05
Apparel	0.24	2.16	7.41	-8.05	3.93	0.28	-2.47
Transportation	0.07	2.11	8.08	4.23	23.52	-19.66	-6.47
Medical Care	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Recreation	0.15	-2.22	0.00	0.00	2.24	-3.05	-0.06
Education and Comm.	0.00	0.00	0.00	0.00	1.06	0.00	0.00
Other Good and Services	-2.15	2.10	2.12	-0.17	-11.50	0.50	0.88



Ebeye Consumer Price Index

New System for the Consumer Price Index for Ebeye has been established through technical assistance provided by the Secretariat of the South Pacific (SPC) to satisfy inquiry made by the EPPSO. Implementation of the technical assistance was met and successfully completed by Chris Ryan of SPC, with assistance of John Henry of Economic Policy, Planning and Statistics Office. The effort was carefully worked through a proposed set of items to tie in with the nine key groups of the RMI CPI in order to produce a broad level of weights for Ebeye. As a result, new weights were derived for the Ebeye Consumer Price Index but were not exactly yielded as the weights generated for the four islands combined in the preceding Household Income and Expenditure Survey (HIES 2002). As new weights achieved were very close to the old weights, calculation of new CPI when taking place won't be an issue.

Comparison between old & new Ebeye weights

GROUP	Weight	
	New	Old
Food	46.7	73.4
Alcoholic Beverages	1.4	
Housing, Utilities and Major Appliances	15.9	0.1
Apparel	6.1	2.4
Transportation	12.3	9.0
Medical Care	0.9	
Recreation	2.2	
Education & Communication	4.4	
Other Goods & Services	10.1	15.1
TOTAL	100.0	100.0

The table above shows a new structure of the Ebeye Consumer Price Index developed from the effort.

After working through each group in the broad level weights of the Ebeye Consumer Price Index, new weights were drawn for each group – i.e. Food Group (73.4 drops to 46.7); Housing, Utilities and Major Appliances Group (0.1 increases to 15.9); Other Goods & Services (15.1 drops to 10.1); The Alcoholic Group, the Medical Care Group, the Recreation Group, and the Education & Communication that were not accounted for in the old CPI for Ebeye now are included.

Comparison between Ebeye weights and RMI weights

GROUP	Weight	
	Ebeye	RMI
Food	46.7	35.9
Alcoholic Beverages	1.4	1.7
Housing, Utilities and Major Appliances	15.9	17.1
Apparel	6.1	4.3
Transportation	12.3	13.7
Medical Care	0.9	2.2

Recreation	2.2	2.3
Education & Communication	4.4	6.6
Other Goods & Services	10.1	16.2
TOTAL	100.0	100.0

As can be seen from the table above, a new comparison reference to the weights of Ebeye versus the RMI weights is good presentation and is giving a good idea of relative importance of each group across the two Consumer Price Indexes of the country.

It is important to note that changing the base period of the Ebeye Consumer Price Index from 1st quarter 2005 = 100 to 4th quarter 2006 = 100 was necessary in order for the new system to work properly.

1st Quarter 2009 CPI for Ebeye

There was a small decrease of 1.53% in the CPI for Ebeye in the first quarter of 2009. Over the last four quarters the Ebeye CPI has increased by 6.32%. There has not been the extreme price fluctuations during these last four quarters on Ebeye like those effecting Majuro.

The Food Group

There was a very slight decrease of 0.21% in the group during this quarter. Rice and flour saw some increases, while several different meat products declined in price.

Alcoholic Beverages Group

There was not change in this group over the quarter.

Housing, Utilities and Major Appliances Group

There was a decrease of 2.18% in this group over this quarter, due to the drop in price for kerosene from \$5.77 to \$4.69 a gallon.

Apparel Group

The group saw a modest decrease of 3.16 during the quarter, because of a steep drop in the prices of pants (jeans).

Transportation Group

There was a significant decrease in this group of (9.08%) due to the drop of \$5.85 to \$4.51 for a gallon of gasoline, considerably cheaper than Majuro, the same situation applies for kerosene.

Medical Care Group

There was not change in this group over the quarter.

Recreation Group

There was not change in this group over the quarter.

Education and Communication Group

There was not change in this group over the quarter.

Other Goods and Services Group

There was an increase of 2.32% in this group over the quarter, as with Majuro attributable to toilet paper.

Ebeye Consumer Price Index by Major Group, 2006_Q4 to 2009_Q1

	2006_Q4	2007_Q4	2008_Q1	2008_Q2	2008_Q3	2008_Q4	2009_Q1
All Group	100.00	107.02	111.52	118.91	128.49	119.72	114.05
Food	100.00	108.33	111.83	116.56	126.07	125.43	125.17
Alcoholic Beveraes	100.00	101.52	101.52	102.76	94.60	97.51	97.51
Housing, Utilities and Major Appliances	100.00	103.10	103.42	120.64	143.51	118.15	91.43
Apparel	100.00	101.17	101.20	115.27	129.91	118.25	114.51
Transportation	100.00	120.07	135.38	145.53	149.75	119.90	109.02
Medical Care	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Recreation	100.00	100.00	107.85	107.85	108.03	108.03	108.03
Education and Comm.	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Other Good and Services	100.00	101.45	108.18	111.35	113.48	112.48	115.09
Percent Change							
All Group		2.58	4.21	6.62	8.06	-6.83	-4.73
Food		1.95	3.23	4.23	8.16	-0.51	-0.21
Alcoholic Beverages		0.00	0.00	1.22	-7.94	3.07	0.00
Housing, Utilities and Major Appliances		3.59	0.31	16.65	18.96	-17.68	-22.62
Apparel		4.20	0.03	13.90	12.70	-8.98	-3.16
Transportation		8.67	12.75	7.50	2.90	-19.93	-9.08
Medical Care		0.00	0.00	0.00	0.00	0.00	0.00
Recreation		0.00	7.85	0.00	0.16	0.00	0.00
Education and Comm.		0.00	0.00	0.00	0.00	0.00	0.00
Other Good and Services		-2.06	6.64	2.93	1.92	-0.88	2.32

Majuro and Ebeye CPI basket Comparison 1st quarter 2009

There was slight increase in the difference between the prices for the same basket of goods on Majuro and Ebeye. The price difference increased from, 10.49% to 12.44% in this first quarter. This is still significantly lower than the 20% - 25% differential rates in 2006 and 2007. This slight increase in the price differential was due to higher prices on Ebeye.

AVERAGE PRICE COMPARSION(Majuro and Ebeye) 2008_Q3 to 2009_Q1

No.	Code	Group and Item Name	2008_Q3			2008_Q4			2009_Q1		
			Majuro	difference %	Ebeye	Majuro	difference %	Ebeye	Majuro	difference %	Ebeye
1	01023	Rice	16.66	-0.78	16.53	14.98	13.98	17.07	15.12	23.99	18.75
2	01024	Flour	18.66	32.58	24.74	17.97	37.60	24.72	17.14	48.70	25.49
3	03018	Canned corned beef	3.11	19.29	3.71	3.31	17.83	3.90	3.72	5.03	3.91
4	03019	Canned corned beef hash*	3.25	14.15	3.71	2.71	40.59	3.81	3.42	12.38	3.84
5	03049	Canned luncheon meat (Spam, etc.)	3.21	29.98	4.17	3.33	26.55	4.21	3.47	24.12	4.30
6	03081	Canned mackeral	1.64	26.83	2.08	1.67	22.51	2.05	1.41	33.69	1.89
7	03082	Canned tuna	1.16	38.17	1.60	1.14	37.07	1.56	1.38	0.44	1.39
8	07061	Coffee (instant coffee)	4.17	57.55	6.57	4.15	58.31	6.57	4.36	62.31	7.07
9	08071	Sugar	2.27	35.24	3.07	2.26	36.48	3.08	2.26	37.82	3.12
10	10041	Ramen and other instant noodles	0.72	1.39	0.73	0.74	-5.62	0.70	0.70	11.22	0.78
11	10071	Soy sauce	2.66	52.26	4.05	2.89	24.08	3.59	2.53	64.22	4.15
12	33083	Kerosene stove*	65.7	-0.96	65.07	65.7	-0.96	65.07	65.07	4.50	68.00
13	33084	Kerosene and other lamps*	15.7	0.00	15.70	15.7	0.00	15.7	15.70	0.00	15.70
14	43032	Zorries	4.75	-3.37	4.59	4.75	-30.53	3.30	4.75	-30.53	3.30
15	51074	Gasoline	6.65	12.63	7.49	5.81	0.69	5.85	5.04	-10.43	4.51
16	93007	Cigarettes	3.1	61.29	5.00	3.10	61.38	5.00	3.10	61.38	5.00
17	93016	Mosquito coils*	2.25	86.67	4.20	2.25	86.67	4.2	4.20	-8.33	3.85
18	93022	Kerosene	6.94	6.77	7.41	6.98	-17.37	5.77	6.49	-27.70	4.69
			162.60	10.96	180.42	159.43	10.49	176.15	159.85	12.44	179.74

