State of Palestine
Palestinian Central Bureau of Statistics

Consumer Price Index, 2022

User's Guide

Table of Contents

Terms, Indicators and Classifications

Terms and Indicators

The following terms and indicators are defined in accordance with the statistical indicators glossary and guide issued by PCBS based on the latest international statistical classifications and in consistence with international systems.

Inflation:

It is the overall general upward price movement of goods and services in the economy. The inflation rate is calculated in accordance with the following equation:

$$\text{Inflation rate} = (\frac{P_t}{P_{t-1}} - 1) * 100$$

where: Pt is the general price level in the comparison periods.

Pt-1 represents the general level of prices for previous periods.

Price Index:

It is a statistical tool used to measure changes in prices of purchased goods and services during different temporal intervals.

Purchasing Power of Money:

It is the value of money as measured by the quantity and quality of goods and services it can buy.

Laspeyres Equation:

It is an equation used for calculating price indices, which measures comparative period prices in relation to a base period price, multiplied by the proportional weight of commodity or goods groups throughout the base year.

Consumer Price Index:

It is a statistical tool used to measure the average changes in the prices of goods and services that households consume during two different periods: one called the base period and the other called the comparison period.

Consumer Price:

It is a price paid by households to gain a commodity or service.

Base Time:

It refers to the period to which the current period is being compared.

Consumer Basket:

The categories of classified goods and services used by the consumer.

Relative Weight:

It is the percent which reflects the relative significance of the commodities and services within the consumer basket or any component of the index which is used in the mathematical calculation of the index.

Base Prices:

It refers to the prices of goods and services in a period to which current prices are being compared.

Percentage Change in Price Index (Indicator):
It is the change in the index calculated by dividing the price index of a particular period by the price index of another compared period, multiplied by one hundred, then subtracting one hundred.

Chaining Coefficient:
It is a term used to adjust indices in different base periods to the same base period so that they can be compared.

Classifications
Classifications are used in the process of collection, coding and processing of statistical data, as adopted by PCBS, in conformity with international standards and taking into account the specific Palestinian context.

1. Classification of Individual Consumption according to Purpose (COICOP), First Version 2018:

It is a part of (SNA-2008) and is used in three important statistical axes: household expenditure and consumption surveys (PECS), Consumer Price Indices (CPI), International Comparison Program (ICP) for Gross Domestic Product (GDP) and its expenditures component.

The (COICOP-2018) classification is divided into three parts:
- Divisions (1-13): Individual Consumption Expenditure of Households.
- Division (14): Individual Consumption Expenditure of Non-Profit Institutions Serving Households.
- Division (15): Individual Consumption Expenditure of General Government.

Groups are divided for national purposes into sub-groups, with five digits each, which are subsequently subdivided into categories with six digits.

Methodology

PCBS has been collecting data on the prices of consumer in order to establish updated price indices. It has also been collecting data on industrial production. PCBS has developed an integrated system covering all aspects in terms of price collection methods, sources and geographical distribution. Used weights are considered as the foundation for the indices system, and the basket of goods and services is the real group that is monitored, its price changes are studied at regular intervals for the purpose of calculating the standard numbers.

Objectives of Prices and Indices
The prices surveys primarily provide the following:
- Data on CPI in Palestine covering the West Bank, Gaza Strip and Jerusalem J1 for major and sub groups of expenditure.
- A measure of price percent change in Palestine, whether domestic or imported.
- Statistics needed for decision-makers, planners and those who are interested in the national economy.
- Contribution to the preparation of quarterly and annual national accounts data.

Uses of Prices and Indices
Prices and indices are used for a wide range of purposes, the most important of which are as follows:
- Adjustment of wages, government subsidies and social security benefits to compensate in part or in full for the changes in living costs.
- To provide an index to measure the price inflation of the entire household sector, which is used to eliminate the inflation impact of the components of the final consumption expenditure of households in national accounts and to dispose of the impact of price changes from income and national groups.
- Price index numbers are widely used to measure inflation rates and economic recession.
- Price indices are used by the public as a guide for the family with regard to its budget and its constituent items.
- Price indices are used to monitor changes in the prices of the goods traded in the market and the consequent position of price trends, market conditions and living costs. However, the price index does not reflect other factors affecting the cost of living, e.g. the quality and quantity of purchased goods. Therefore, it is only one of many indicators used to assess living costs.
- It is used as a direct method to identify the purchasing power of money, where the purchasing power of money is inversely proportional to the price index.

Questionnaire
A tablet-supported electronic form was designed for price surveys to be used by the field teams in collecting data from different governorates, with the exception of Jerusalem J1. The electronic form is supported with GIS, and GPS mapping technique that allow the field workers to locate the outlets exactly on the map and the administrative staff to manage the field remotely. The electronic questionnaire is divided into a number of screens, namely:
- First screen: shows the metadata for the data source, governorate name, governorate code, source code, source name, full source address, and phone number.

- Second screen: shows the source interview result, which is either completed, temporarily paused or permanently closed. It also shows the change activity as incomplete or rejected with the explanation for the reason of rejection.
- Third screen: shows the item code, item name, item unit, item price, product availability, and reason for unavailability.
- Fourth screen: checks the price data of the related source and verifies their validity through the auditing rules, which was designed specifically for the price programs.
- Fifth screen: saves and sends data through (VPN-Connection) and (WI-FI technology).

In case of the Jerusalem J1 Governorate, a paper form has been designed to collect the price data so that the form in the top part contains the metadata of the data source and in the lower section contains the price data for the source collected. After that, the data are entered into the price program database.

Sample and Frame

Target Population
- The target population for the CPI survey is the shops and retail markets such as grocery stores, supermarkets, clothing shops, restaurants, public service institutions, private schools and doctors.

Sampling Frame, Design, and Sample Size
A non-probability purposive sample of sources from which the prices of different goods and services are collected was updated based on the establishment census 2017, in a manner that achieves full coverage of all goods and services that fall within the Palestinian consumer system. These sources were selected based on the availability of the goods within them. It is worth mentioning that the sample of sources was selected from the main cities inside Palestine: Jenin, Tulkarm, Nablus, Qalqiliya, Ramallah, Al-Bireh, Jericho, Jerusalem, Bethlehem, Hebron, Gaza, Jabalia, Dier Al-Balah, Nusseirat, Khan Yunis and Rafah. The selection of these sources was considered to be representative of the variation that can occur in the prices collected from the various sources. The number of goods and services included in the CPI is approximately 730 commodities, whose prices were collected from 3,200 sources. (COICOP) classification is used for consumer data as recommended by the United Nations System of National Accounts (SNA-2008).

Domains
- CPI in Palestine covers the West Bank, Gaza Strip and Jerusalem J1 for major and sub-groups.

Goods and Services Classification

Classification of CPI
CPI consists of thirteen consumption groups according to the new (COICOP-2018) classification, issued by the (UNSD):

- Food and Non-Alcoholic Beverages
- Alcoholic Beverages, Tobacco and Narcotics
- Clothing and Footwear
- Housing, Water, Electricity, Gas and Other Fuels
- Information and Communication
- Recreation, Sport, Culture, Gardens and Pets
- Education Services
- Restaurants and Accommodation Services

[6]

- Furnishings, Household Equipment and Routine Household Maintenance
- Health
- Transport

- Insurance and Financial Services

- Personal Care, Social Protection and Miscellaneous Goods and Services

Weighting Calculation

Weighting Calculation of CPI
The relative significance of goods and services in the consumer basket (CB) is based on the result of the Palestinian Expenditure and Consumption Survey (PECS) conducted in 2016 - 2017 on a sample of 3,740 families.
The value of consumption of each item of goods and services in the CB reflects the relative significance of that item in total Palestinian consumption patterns during that period. The overall value of the CB is assumed to be one hundred thousand points (100,000).

It should be noted that the estimated imputed rent has been excluded from the results of the PECS when deriving weights for CPI and is not represented in the calculation of the CPI by the housing group.

The following table shows the relative distribution of the weights used in calculating the CPI for the major groups based on PECS for 2016-2017:

Major Groups of Expenditure	Relative Weight			
	Palestine	West Bank*	Gaza Strip	Jerusalem J1**
Food and Non-Alcoholic Beverages	28.15	27.79	32.98	21.95
Alcoholic Beverages, Tobacco and Narcotics	5.31	5.56	3.89	6.40
Clothing and Footwear	4.89	4.83	5.18	4.75
Housing, Water, Electricity, Gas and Other Fuels	9.07	8.28	10.15	11.35
Furnishings, Household Equipment and Routine Household Maintenance	4.44	4.44	4.11	4.99
Health	3.57	3.64	4.27	1.97
Transport	14.26	16.36	7.67	14.39
Information and Communication	5.09	5.09	5.03	5.19
Recreation, Sport, Culture, Gardens and Pets	1.69	1.65	1.72	1.85
Education Services	3.56	3.70	3.49	2.93
Restaurants' and Accommodations Services	2.79	2.84	2.89	2.38
Insurance and Financial Services	4.28	3.31	6.36	5.86
Personal Care, Social Protection and Miscellaneous Goods and Services	12.90	12.51	12.26	15.99
Overall Consumer Price Index	**100**	**100**	**100**	**100**

* Data exclude those parts of Jerusalem which were annexed by Israeli Occupation in 1967.
** Data represent those parts of Jerusalem which were annexed by Israeli Occupation in 1967.
CPI weight update to be 2018 using the general price level for 2018 compared to 2016-2017.

The following table shows the relative distribution of the weights used in calculating the CPI by region based on PECS for 2016-2017:

Region	Relative Weight
Palestine	**100**
West Bank*	66.09
Gaza Strip	21.27
Jerusalem J1**	12.64

* Data exclude those parts of Jerusalem which were annexed by Israeli Occupation in 1967.
** Data represent those parts of Jerusalem which were annexed by Israeli Occupation in 1967.
CPI weight update to be 2018 using the general price level for 2018 compared to 2016-2017.

Calculation of Price Indices

Price indices were calculated using the Laspeyres equation. This equation applies weighting through base-period quantities. According to this equation, the index for each commodity is calculated first, then the elementary indices for each group are calculated. After that, the elementary indices are weighted by the base period quantity until it becomes possible to calculate the general price index.

CPI produces separate indices for the West Bank, Gaza Strip and Jerusalem J1 and PCBS adjusted its base year to 2004 instead of 1996. At the beginning of 2014, the base year for CPI was modified to 2010 instead of 2004.

Fieldwork Operations

Data collection and field coordination were carried out according to the plan prepared for this purpose, in addition to the preparation of instructions, models and tools for fieldwork.

Training and Hiring

The fieldwork team selected for the price surveys should meet the following conditions and specifications:
- They must have a degree in one of the following disciplines: Accounting, Economics, Finance and Banking.
- Those who have previously worked on the price surveys.

It should also be noted that the fieldwork team receives a full training course (theoretical and practical) to clarify all technical and field matters. Those who pass the evaluation test successfully are selected. The researchers of the fieldwork team are also supervised and monitored by the project management and the survey supervisor for a full week when starting work for the first time to assess the validity of the work in terms of the proficiency of all concepts and proper use of the data collection tool.

Data Collection

Data on prices were collected through field visits carried out by trained staff to selected markets including groceries, supermarkets, cloth and clothing markets, restaurants, general service offices, hospitals, private schools, wholesalers and factories, in addition to sources of construction products related to the index.

The interviewers were provided with questionnaires that included all the required items and data sources, along with detailed descriptions of goods and outlets. Electronic forms of questionnaire supported with GIS, and GPS mapping technique were designed specially to

collect prices for different surveys through the use of tablet devices in the West Bank and Gaza Strip while paper questionnaires were used in Jerusalem J1.

The title of each source was clarified for easy access by the researchers. The distribution of these resources in each city took into account covering all available goods and services and their diversity. For example, the prices of vegetables were taken from popular markets in addition to specialized markets in different parts of the city.

Due to COVID-19 pandemic and inability to conduct face-to-face interview, the data for all Price Indices surveys has been collected using mobile phones, in all of the Palestinian Governorates interviews.

Three different prices for food products should be collected within one city in CPI, and one or two prices for the rest of the items, taking into consideration the speed or frequency of the change in the price of the item or service, which is shown by their frequent circulation. The prices for each item were distributed throughout the month by distributing the visits to the sources within each city for period of four weeks, so that the prices for the commodity are monitored at different periods of the month. As for vegetables and fruits, their prices were collected on Sunday, Tuesday, and Thursday of every week.

The field staff benefited from all the documents in the survey files such as survey letters. They also benefited from survey objectives, the collection of price data, data uses, and the usefulness of the price indices for the Palestinian society.

Field Editing and Supervising
The fieldwork team consisted of a fieldwork coordinator, office managers and a field team in all governorates. PCBS provided offices in all governorates since the task of supervising, monitoring and auditing of the various project activities required the presence of offices in the governorates that are close to the various work areas to be used by the field teams before and after the completion of daily work in the processes of receipt and delivery of various work tools, filling forms, writing reports, and reviewing and auditing the outcome of daily work.

The fieldwork coordinator in each governorate carried out periodic monthly field visits with the field team to examine the progress of the work and inform the project management of any urgent developments in the field in order to solve them. The project management also carried out periodic field visits in all governorates in order to examine the progress of the work and verify the researchers' ability to identify themselves, carry out the surveying processes, use tablets, complete forms, audit and review data, and follow up all recommendations resulting from the field visits.

Office Editing and Coding
The price survey forms were already encoded by the project management depending on the specific international statistical classification of each survey. After the researcher collected the price data and sent them electronically, the data was reviewed and audited by the project management. Achievement reports were reviewed on a daily and weekly basis. Also, the detailed price reports at data source levels were checked and reviewed on a daily basis by the project management. If there were any notes, the researcher was consulted in order to verify the data and call the owner in order to correct or confirm the information.

Data Processing

Programming Consistency Check
Price programs were designed using the programming language: (Apache Cordova Phone Gap) and for exterior design both (HTML and CSS3) were used while for coding, (JAVA script and J-Query) were used.

Due to the use of tablets in the collection of price data, the computerized form supported with GIS, and GPS mapping technique, which was loaded to the survey program was collected and entered by the field researcher. Automated auditing rules were set at the commodity level to each price program; namely:
- To compare the price entered by the researcher for that commodity with the price range set for each commodity so that a minimum value and a maximum value for the price were determined for each commodity in a way that the program did not accept any entry price below the minimum value or higher than the maximum value. If a wrong price was entered, a window appeared for the researcher showing that the entered price was below the minimum price or above the maximum limit of the price, and he/she should check and correct it.
- To compare the price entered by the researcher with the price entered in the previous month directly so that the rate of permissible change in the value of the price does not exceed the determined level of that commodity. If a wrong price was entered; a window appeared to the researcher showing that the price entered exceeded the allowable rate of change, and he/she should check and correct it.
- To compare the price entered by the researcher with the average price of that product so that the rate of permissible change in the value of the price does not exceed the determined level of that commodity. If a wrong price was entered, a window appeared to the researcher showing that the price entered exceeded the allowable rate of change after it was compared to the base price, and he/she should check and correct it.

The program does not accept any wrong prices. In case one of the above mentioned windows appeared, the researcher checked the price again and corrected it directly in the entry program. Therefore, errors were discovered and greatly reduced in the field.

Data Cleaning
At the end of the data collection process in all governorates, the data will be edited using the following process:
- Logical revision of prices by comparing the prices of goods and services with others from different sources and other governorates. Whenever a mistake is detected, it should be returned to the field for correction.
- Mathematical revision of the average prices for items in governorates and the general average in all governorates.
- Field revision of prices through selecting a sample of the prices collected from the items.

Tabulation
After reviewing and checking the data, a report is prepared for the average prices for commodities at each region's levels. This file is then entered into the calculation file, which is an Excel file with mathematical equations used to calculate the indices by using the Laspeyres equation. This equation applies weighting through base-period quantities. According to this equation, the index for each commodity is calculated first, then the elementary indices for each

group are calculated and they are then weighted by base period quantity until it becomes possible to calculate the general price index.

After that, schedule records are filled into a table which is prepared for publication according to different classifications used for each index type, especially by main and sub-group components for each index. The results are then drafted in the form of monthly, quarterly or annual press releases in Arabic and English enhanced by statistical charts and tables.

Quality

This chapter includes an overview of data accuracy which includes both sampling errors and non-sampling errors, as well as data comparison.

Accuracy

The price were collected using sampling methods, so that these prices and quantities are exposed to sampling errors and non-sampling errors.

Sampling Errors

The findings of the survey may be affected by sampling errors due to the use of samples in conducting the survey rather than total enumeration of the units of the target population, which increases the chances of variances between the actual values we expect to obtain from the data if we had conducted the survey using total enumeration. The variance of the key goods in the computed and disseminated CPI survey that was carried out on the Palestine level was for reasons related to sample design and variance calculation of different indicators since there was a difficulty in the dissemination of results by governorates due to lack of weights.

Non-Sampling Errors

Non-sampling errors are probable at all stages of data collection or data entry. Non-sampling errors include:

- Non-response errors: the selected sources demonstrated a significant cooperation with interviewers; so, there wasn't any case of non-response reported.
- Response errors (respondent), interviewing errors (interviewer), and data entry errors: to avoid these types of errors and reduce their effect to a minimum, project managers adopted a number of procedures, including the following:
  1. More than one visit was made to every source to explain the objectives of the survey and emphasize the confidentiality of the data. The visits to data sources contributed to empowering relations, cooperation, and the verification of data accuracy.
  2. Interviewer errors: a number of procedures were taken to ensure data accuracy throughout the process of field data compilation:
     a. Interviewers were selected based on educational qualification, competence, and assessment. Interviewers were trained theoretically and practically on the questionnaire.
     b. Meetings were held to remind interviewers of instructions. In addition, explanatory notes were supplied with the surveys.
  3. A number of procedures were taken to verify data quality and consistency and ensure data accuracy for the data collected by a questioner throughout processing and data entry (knowing that data collected through paper questionnaires did not exceed 5%):
     a. Data entry staff was selected from among specialists in computer programming and were fully trained on the entry programs.
     b. Data verification was carried out for 10% of the entered questionnaires to ensure that data entry staff had entered data correctly and in accordance with the provisions of the questionnaire. The result of the verification was consistent with the original data to a degree of 100%.
     c. The files of the entered data were received, examined, and reviewed by project managers before findings were extracted. Project managers carried out many checks on data logic and coherence, such as comparing the data of the current month with that of the previous month, and comparing the data of sources and between governorates.

4. Data collected by tablet devices were checked for consistency and accuracy by applying rules at item level to be checked.

4.1.3 Other Actions Carried Out by the Project Management to Improve Data Quality
1. Re-checking the full forms after researcher's verification/checking.
2. Other technical procedures to improve data quality:
   - Seasonal adjustment processes and estimations of non-available items' prices:
   Under each category, a number of common items are used in Palestine to calculate the price levels and to represent the commodity within the commodity group. Of course, it is necessary to define the specifications of these items in order to ensure that the quality or specifications do not differ when prices are collected. However, the problem sometimes encountered is the lack of prices for some commodities due to seasonality, which often appears in vegetables and fruits during some stages for a particular source or for all sources and is expected to reappear (temporary disappearance) as is the case for sources that are closed for a short time for any reason.
   Such cases are treated in a scientific way called the (Group Relative Method), which is the process of estimating the prices based on the change in the prices of the remaining sources for the same category in the absence of the commodity in all sources. In the case of the closure of an entire source on a temporary basis, all the prices of that source are estimated on the basis of changes in the prices of the sources that share the same items. An example of cases encountered in the CPI survey is the absence of varieties and sources affiliated to fruits and vegetables, as well as clothing.
   - Processing the disappearance of commodity classes and sources:
   It should be noted that the basket of goods and services that have been selected and called by the CB is not fixed but changes over time by changing in the consumers' patterns and tastes. This is in addition to new commodities appearing. Therefore, it is necessary to change them and find substitutes with a special replacement methodology. When certain items of goods completely disappear, they are replaced with new items similar in type and specifications by selecting the new category which has a high rate of consumer demand. The base price of the new category is estimated using three statistical methods:
   1. Direct Comparison Method:
      This method is used if the country of origin of the item changes with the consistency of the specifications of the product such as its unit and ingredients and there is no change in price between the two varieties. So, the same base price is used. The use of this method led to maintaining the correct representation of the Palestinian CB and the index was not affected by the change in the origin of the commodity.
   2. Time Interference Method:
      This method is used when the current commodity is about to disappear and loses its representative in the CPI but its price is still available and getting low, with the appearance of a new item that must be replaced within the same period, so a new base price is estimated as follows:

$$N_b = \frac{P_b * P_{t-1}}{P_{0-1}}$$

where:

N_b = Base price of the new commodity.

P_b = Base price of the old commodity.

P_{t-1} = New item price in the previous month.

P_{0-1} = Old item price in the current month.

This method has led to keeping pace with the developments and changes happening to goods in the Palestinian CB and reflect reality.

3. Time Linking Method:
    This method is used when the current commodity disappears completely in a certain month and a new alternative appears in the following months. The old commodity is replaced by the new one and the new base price is estimated using the following formula:

$$N_b = \frac{P_b * P_c}{P_{0-1}}$$

where:

N_b = Base price of the new commodity.

P_b = Base price of the old commodity.

P_c = New item price in the current month.

P_{0-1} = Old item price in the previous month.

Using this method, the logic and quality of the CPI are maintained over time series, and the data values are not affected by the disappearance of a particular category from the market and, therefore, the index is not diverted because of the disappearance of the category.

The project management is dealing with many such cases that faced the survey through the previous scientific methods, such as changes in the quality of electrical appliances, household appliances, as well as the items and sources of clothing and footwear.

4.2 Comparability
Comparisons were made between various survey data such as the comparisons between the consumer price survey data and producer and wholesale price data, as well as with data on agricultural commodities available from the Ministry of Agriculture. Also, comparisons were made between fuel prices issued by the Palestinian Petroleum Authority. As an example, the results of these comparisons were 100% in relation to most CPI prices, while there was a difference of no more than 5% in terms of agricultural commodities' prices due to reasons related to sample selection.

4.3 Re-interviewing
The surveys of prices and indices are carried out on a monthly or quarterly basis with sample stability. Therefore, re-interviewing does not apply. The data for each session were compared with the previous session and consistency was examined.

4.4 Other Technical Remarks

Some important technical points must be taken into consideration regarding this report, as follows:

1. Sources in rural areas and refugee camps were not counted due to the lack of adjustment weights for these areas. It was considered sufficient to select sources from the main cities in the West Bank, Gaza Strip and Jerusalem J1. The sources of data compilation were distributed among the main cities in the governorates of Palestine as follows:

   West Bank: Tulkarm, Jenin, Qalqiliya, Nablus, Ramallah, Al-Bireh, Jericho, Bethlehem and Hebron
   Gaza Strip: Gaza, Jabalia, Khan Yunis, Rafah, Dier Al-Balah and Al-Nusseirat
   Jerusalem J1: represents those parts of Jerusalem which were annexed by Israeli Occupation in 1967

2. Some changes in data sources took place when the field survey was conducted including changes in their activities or permanent or temporary closures. These cases were dealt with scientific statistical methods. In addition, goods were upgraded according to changes in quality or quantity in accordance with international standards.

3. Data classification was in accordance with international standards. The recommendations of national accounts (SNA-2008) concerning the classification of consumer groups were adopted using (COICOP-2018).

4. It should be noted that the estimation of actual house rent has been excluded from the results of PECS when deriving weights for CPI and is not represented in the calculation of CPI for the housing group.

4.5 Notice when using a data file

- The consumer price index data file contains the monthly and the annual average prices of the goods and services basket that make up the consumer price index at the level of geographic areas (Palestine, West Bank, Gaza Strip, and Jerusalem J1).
- File divisions:
    1. Item code.
    2. Item description.
    3. Item unit.
    4. Year.
    5. The geographical area (Palestine, West Bank, Gaza Strip, Jerusalem J1).
    6. The price during the months (January, February, March, April, May, June, July, August, September, October, November, December, the annual average).
- Notes:
    1. Jerusalem J1 data represent those parts of Jerusalem, which were annexed by Israeli Occupation in 1967.
    2. West Bank data exclude those parts of Jerusalem, which were annexed by Israeli Occupation in 1967.