



# Food Price Index: March 2013

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# Food Price Index: March 2013

## Population

### Food Price Index

Food Price Index

The population coverage of the FPI relates to the expenditure of private, New Zealand resident households living in permanent dwellings. The reference population covers approximately 98 percent of the usually-resident population .

## Food Price Index Series 2011

### Methodology

#### Sample size

About 22,000 prices were collected from 650 retail outlets.

#### Imputation

Due to being unavailable at the time of price collection, on average 0.7 percent of prices (not including seasonal fresh fruit and vegetables) are imputed each month by carrying forward the previous month's price.

#### Reference population

The reference population of the FPI covers approximately 98 percent of the usually-resident New Zealand population living in permanent dwellings. There are no exclusions based on income source or geographic location.

#### Expenditure weights

Expenditure weights give the relative importance of the food goods and services in the FPI basket.

The FPI represents about \$16.9 billion spent on food goods and services by New Zealand households each year (at June 2011 month prices). This is based on information from the 2009/10 Household Economic Survey and other sources.

New Zealand households spent \$15.7 billion on food goods and services in the year to June 2010 (which is the latest period available). Once the effect of price change between the year to June 2010 and the year to June 2011 is taken into account (called 'price updating'), spending on food rises to \$16.9 billion.

The relative importance of the FPI subgroups shows that about \$38 of every \$100 households spend on food is spent on grocery food. About \$21 is spent on eating out or takeaways, and about \$16 is spent on meat, poultry, and fish. Fruit and vegetables account for \$14, and the remaining \$11 is spent on non-alcoholic beverages, such as packaged coffee, soft drinks, and juices.

More information on the relative importance of FPI subgroups, classes, and selected sections is in table 6 of this release.

#### Collection methods

Prices are surveyed by visiting retail outlets in 15 urban areas: Whangarei, Auckland, Hamilton, Tauranga, Rotorua, Napier-Hastings, New Plymouth, Wanganui, Palmerston North, Wellington, Nelson, Christchurch, Timaru, Dunedin, and Invercargill. Fresh fruit and vegetable prices are surveyed weekly, and the remaining food prices are generally surveyed between the 8th and 16th day of the month, although sometimes surveying starts and finishes earlier or later.

#### Sample design

Food prices are collected from about 650 outlets in the 15 surveyed urban areas. Of these, about 70 are supermarkets, 30 greengrocers, 30 fish shops, 30 butchers, 50 convenience stores (with half being service stations and the other half being dairies, grocery stores, and superettes), 120 restaurants (for evening meals), and more than 300 other suitable outlets (for breakfast, lunch, and takeaway food).

Statistics New Zealand collects prices from a sample of supermarkets in each of the 15 FPI pricing regions. This sample is designed to be representative of household purchases in each region. It was last reviewed in 2011. The sample of other stores was last reviewed in 2006.

#### Accuracy of the data

Review of the food price index

Reviews of the FPI are undertaken every three years, as part of wider reviews of the consumers price index (CPI). The latest review was implemented with the publication of the July 2011 FPI.

The review involved reselecting the basket of representative food goods and services, calculating new national expenditure weights, and updating regional population weights.

The previous product sample's final price collection period was June 2011. The updated FPI sample of products also had prices collected in June 2011. An overlapping price collection is necessary when changing a price index, to ensure changes in basket composition (eg basket additions, different outlets) are not reflected as price changes.

See food price index review: 2011 for more information.

#### Population weights

Population weights are used to allocate the national expenditure weights of goods and services to the FPI pricing centres. For

example, the population weights ensure that a price change in Auckland (which has 33.43 percent of the population weight) would have about three times the effect on the national FPI than the same price change in Wellington (which has 11.07 percent of the population weight).

The latest subnational population estimates, which are published annually, are used to calculate the population weights at each FPI review. Estimates at 30 June 2010 were the latest figures available at the time of the 2011 FPI review. This means that any potential population movements following the Christchurch earthquakes in 2010/11 are not reflected in these weights.

Population weights will be monitored, and if considered necessary, updated to maintain the accuracy of the FPI.

Statistics NZ publishes FPI and CPI price indexes for five broad regions based on regional council area boundaries. These indexes are available from Infoshare. These regions are Auckland, Wellington, rest of North Island, Canterbury, and rest of South Island.

For the population weights of each region in the FPI, see table 7 of this release.

#### **Outlet weights**

Outlets are given appropriate weights to reflect their relative importance in terms of household spending.

#### **Elementary aggregate formulae**

Regional elementary aggregates are calculated for each of the 15 pricing centres from all prices collected for an item within that region. Regional elementary aggregates are calculated using a 'geometric mean of price relatives', or Jevons formula.

The Jevons formula is used to calculate average prices for all food goods and services in the basket, except fresh fruit and fresh vegetables. The Jevons formula assumes that households spend the same amount at each surveyed outlet in each period. This implies that increased quantities are purchased from outlets showing lower-than-average relative price change and decreased quantities from outlets showing higher-than-average price change. The calculation of fresh fruit and vegetable average prices uses the Dutot formula.

Information about the Food Price Index gives more information on the Jevons and Dutot formulae (see elementary aggregate formulae).

#### **'On special' prices**

Items that are 'on special' are included in the FPI at the price levels observed at the time of price collection. Quantity specials (for example, three loaves of bread for \$5.00) are also taken into account (as the price per loaf for the special is usually lower than the price of a single loaf).

Where discounted prices are available only to customers who belong to discount schemes, this is represented in the FPI by collecting these prices at some outlets within a region, but not others.

#### **Consistency with other periods or datasets**

Impact of the Christchurch earthquakes on price collection

Following the Christchurch earthquake on 22 February 2011 price movements for the rest of New Zealand were used to calculate price movements in Christchurch for the March FPI. In June 2011, about half the prices used to calculate the June 2011 FPI had been collected before the 13 June earthquakes, collection was completed on 20 and 21 June, two working days later than other regions where we collect prices for the FPI.

#### **Index reference**

The FPI has an index reference period of the June 2006 month (=1000). This is the benchmark to which prices in other periods are compared (eg if the index number in a later period is 1150, prices have increased by 15.0 percent since the index reference period). Prices for later periods can also be compared in the same fashion.

#### **Seasonal adjustment of prices - fresh fruit and vegetables**

Until the June 2006 month, fresh fruit and vegetable items that exhibited a seasonal pattern were adjusted to remove the effect of normal seasonal change. From the July 2006 month onwards, the FPI incorporates seasonally unadjusted prices for fresh fruit and vegetables. This change is in line with a recommendation made by the 2004 CPI Revision Advisory Committee.

The ongoing, fully unadjusted FPI is linked at the June 2006 month to the previously published FPI, which is partly seasonally adjusted. As such, care is required when comparing annual movements over this transition period. Annual movements calculated over the annual period encompassing the June 2006 month were based on fully unadjusted index numbers for the latest month, compared with adjusted index numbers for fresh fruit and vegetables for the same month of the previous year.

#### **Reconciling the FPI and food group of the CPI**

When comparing the FPI and the food group of the CPI, strictly speaking, the quarterly food group index number is not the average of the relevant three monthly FPI numbers. There are some technical differences between the monthly FPI indexes and quarterly indexes.

#### **Interpreting the data**

Seasonal availability of fruit and vegetables

Fruit and vegetable prices are reflected in the FPI when there is enough produce available to estimate representative average prices. For example, prices for nectarines are historically not included in the April and May FPI. Similarly, prices for strawberries are not included in the May and June FPI. This is because not enough prices can be collected from stores during these months. No price change is shown in the FPI for these items during these months. When produce returns to sufficient levels, the prices are again reflected in the FPI. Price movements then reflect the price change from the month that the item was last included to the current month.

#### **Weighted average retail prices of selected food items**

Table 3 contains a selection of weighted average retail prices for the current and previous months. These weighted average retail prices were calculated from prices collected in the June 2006 month. Subsequent months' weighted average prices are then calculated by applying price index movements for the relevant items. These are not statistically accurate measures of average transaction price levels, but are reliable indicators of percentage changes in prices increased by 15.0 percent since the index reference period. Prices for later periods can also be compared in the same fashion.

## Collection Events

**1960 -**

### Intended Frequency

Monthly

Date	2011-07 - 2014-06
Spatial Coverage	New Zealand
Highest Level	New Zealand
Lowest Level	Whangarei, Auckland, Hamilton, Tauranga, Rotorua, Napier-Hastings, New Plymouth, Wanganui, Palmerston North, Wellington, Nelson, Christchurch, Timaru, Dunedin, and Invercargill.

## Variables

### FPI published variables July 2020

**Name**                      **Range**

SE9011

SE901101

SE901102

SE9012

SE901201

SE9012011

SE9012012

SE9012013

SE9012014

SE9012016

SE901202

SE9013

SE901301

SE9013011

SE9013012

SE9013013

SE9013014

SE9013015

SE9013016

SE901302

SE9013021

SE9013022

SE9013023

SE9013024

SE9013025

SE9013026

SE901303

SE901304

SE901305

SE901306

SE9014

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<b>Name</b>	<b>Range</b>
SE901401	
SE901402	
SE9015	
SE901501	
SE901502	
SE901	

## FPI weighted prices published variables 2011

<b>Name</b>	<b>Range</b>
SAP0100	
SAP0101	
SAP0102	
SAP0103	
SAP0104	
SAP0105	
SAP0106	
SAP0107	
SAP0108	
SAP0109	
SAP0110	
SAP0111	
SAP0112	
SAP0113	
SAP0114	
SAP0115	
SAP0116	
SAP0117	
SAP0118	
SAP0119	
SAP0120	
SAP0121	
SAP0122	
SAP0123	
SAP0124	
SAP0125	
SAP0126	
SAP0127	
SAP0128	
SAP0129	
SAP0130	
SAP0131	
SAP0132	
SAP0146	
SAP0134	
SAP0145	

Name	Range
SAP0136	
SAP0137	
SAP0138	
SAP0139	
SAP0140	
SAP0144	
SAP0142	
SAP0143	

## Concepts

### Food Price Index

Name	Description
Food Price Index	<p><b>Food Price Index</b></p> <p>The food price index (FPI) measures the rate of price change of a fixed basket of food goods and services purchased by households. The FPI aims to measure price changes of the same items (brand and relevant details) at each outlet over time. When there is a change in the size or quality of any of the goods or services in the basket, we make an adjustment to ensure the price change shown in the FPI is not affected by the change in size or quality.</p> <p>See [Food price index review: 2020 (table 4)](<a href="https://www.stats.govt.nz/methods/food-price-index-review-2020">https://www.stats.govt.nz/methods/food-price-index-review-2020</a>) for a list of the representative food items monitored in the FPI.</p> <p>Food prices are also included in the consumers price index (CPI). The food group is the only group of the CPI for which an index is prepared each month. The all groups CPI is prepared quarterly.</p> <p>Food prices in the consumers price index and food price index explains the sources and methods used to compile food prices.</p>
Price Index	<p><b>Price Index</b></p> <p>A price index measures the change in price between time periods for a given set of goods and services. It summarises a set of prices, collected from many outlets, for this set of goods and services.</p>
Expenditure weights	<p><b>Expenditure weights</b></p> <p>Expenditure weights give the relative importance of the food goods and services in the FPI basket.</p>
Outlet weights	<p><b>Outlet weights</b></p> <p>Outlets are given appropriate weights to reflect their relative importance in terms of household spending.</p>
Index reference	<p><b>Index reference</b></p> <p>The FPI has an index reference period of the June 2017 month (=1000). This is the benchmark to which prices in other periods are compared (eg if the index number in a later period is 1150, prices have increased by 15.0 percent since the index reference period). Prices for later periods can also be compared in the same fashion.</p>
Seasonally adjusted series	<p><b>Seasonally adjusted series</b></p> <p>Seasonal adjustment aims to eliminate the impact of regular seasonal events (such as annual cycles in fruit and vegetable production, winter or pre-Christmas shopping) on time series. Seasonal patterns obscure the underlying behaviour of the series. For more detail on the seasonally adjusted series, see the Excel tables (8, 9.01 and 9.02) in the 'Downloads' box on the release webpage. You can also extract the seasonally adjusted series from Infoshare.</p>

Upward/downward contributions

#### Upward/downward contributions

Items mentioned in the FPI release are usually those that made a large contribution to the overall movement in the FPI. An item's contribution is a combination of its weight in the index (ie its relative importance, based on its share of household spending on food) and the magnitude of price movement. For example, for two items recording the same percentage rise in price, the item with the larger weight in the FPI will have a larger contribution to the overall movement. This contribution is also referred to as points (or index points) contribution.

## Price Index Concepts

Name	Description
Acquisitions approach	There are three key frameworks used to underpin index design; acquisition, payment, and use. Under the acquisition framework approach, index weights are derived from expenditure on the goods and services acquired by households during the weight reference period, irrespective of whether they were wholly paid for or consumed during that period.
Basket	A specified set of goods and services that are used to track the progress of inflation in an economy or in a specific market.
Bias	A systematic tendency for a calculated index to diverge from some ideal or preferred index, resulting from the method of data collection or processing, or the index formula used.
Elementary aggregates	The smallest aggregate for which expenditure data are available and used for price index purposes. The values of the elementary aggregates are used to weight the price indices for elementary aggregates to obtain higher-level indices. The range of goods and services covered by an elementary aggregate should be relatively narrow, and may be further narrowed by confining the goods and services to those sold in particular types of outlet or in particular locations. Elementary aggregates also serve as strata for the sampling of prices.
Expenditure Weights	The measure of the relative importance of an item in the index basket, based on the expenditure of the item relative to expenditure on all items in the basket.
Hedonic method	A regression model in which the market prices of different products are expressed as a function of their characteristics. The estimates may be used to predict the price of a new product for which the mix of characteristics is different from that of any product already on the market. The hedonic method can therefore be used to estimate the effects of quality changes on prices.
Index number	Each index shows how a set of prices has changed over time. It is the change between two index numbers that is important. An individual index number has no meaning.
Index reference period	The index reference period is the period for which the value of the index is set to equal 100 or 1000.
Indexes	Indexes are used to measure the total impact of changes in the attributes of commodities which cannot be compared directly. In New Zealand the most common use of index numbers is to measure changes in prices, volumes, or money values over time. When calculating a price index the type, quantity, and quality of each commodity are all held constant so that the price movement can be measured.
Imputed price	The price assigned to an item for which the price is missing in a particular period. This is often done by carrying forward the previous quarter's price. Another way of imputing is to apply the movements of similar categories of items, where the prices were not missing.
Laspeyres price index	A fixed basket index in which the basket is composed of the actual quantities of goods and services in the earlier of the two periods compared, the price reference period. It can also be expressed as a weighted arithmetic average of the price relatives that uses the expenditure shares in the earlier period as weights. The earlier period serves as both the weight reference period and the price reference period.

Payments approach	There are three key frameworks used to underpin index design; acquisition, payment, and use. Under the payments framework, expenditure weights are derived from the total payments made for goods and services during the weight reference period, regardless of when the goods and services were acquired or consumed.
Price reference period	The prices of a period with which prices in the current-period are compared.
Pure price change	The change in the price of a good or service of which the characteristics are unchanged; or the change in the price after adjusting for any change in quality.
Quality adjustment	An adjustment to the change in the price of a product that is designed to remove the contribution of the change in the product characteristics to the observed price change. The adjustment is needed when the price of a replacement product has to be compared with the price of the product it replaces. In practice, the required adjustment can only be estimated. Different methods of estimation, including hedonic methods, may be used in different circumstances.
Reweighting	Updating the weights used in an index with a new set of weights , which reflects a more up to date relative importance of the goods and services in the basket.
Scanner data	Detailed data on sales of consumer goods obtained by scanning the bar codes for individual products at electronic points of sale in retail outlets. The data can provide detailed information about quantities, characteristics and values of goods sold, as well as their prices. Scanner data constitute a rapidly expanding source of data with considerable potential for CPI purposes. They are increasingly used for purposes of hedonic analysis.
Seasonal products	Seasonal products are products that either are not available on the market during certain seasons or periods of the year, or are available throughout the year but with regular fluctuations in their quantities and prices that are linked to the season or time of the year.
Use approach	There are three key frameworks used to underpin index design; acquisition, payment, and use. Under the use framework, expenditure weights are based on the value of the goods and services used or consumed during the reference period.
Weight reference period	The period for which value shares serve as weights for a set of price relatives or elementary price indices. It does not have to have the same duration as the periods for which the index is calculated and is typically longer, a year or more, rather than a month or quarter.

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