



Food Price Index: March 2020

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Food Price Index: March 2020

Food Price Index Series 2017

Methodology

Food price index review

We have reviewed the FPI, as part of a wider, three-yearly consumer price index (CPI) review to ensure the index remains relevant. The latest review was implemented with the publication of Food Price Index: October 2017 month onwards. FPI reviews are generally implemented in July months, however implementation the 2017 review was delayed a quarter due to the impact of the 2016 Kaikoura earthquakes on the work programme.

We updated the basket of representative food items being tracked in the FPI, updated the relative importance (weights) of the items in the basket and re-set the FPI indexes to a base period of June 2017 = 1000. Previous series were published on a base of the June 2006 month = 1000.

The updated weights show that about \$34 of every \$100 that households spend on food, is spent on grocery food. About \$26 is spent on restaurant meals and ready-to-eat food, and about \$15 is spent on meat, poultry, and fish. Fruit and vegetable spending accounts for \$15, and the remaining \$10 is spent on non-alcoholic beverages.

Three items have been added to the FPI basket and seven have been removed, taking the number of items in the basket to 162. The items added to the basket are:

- fresh herbs
- olives
- flavoured tea bags.

The removed basket items are: - alfalfa sprouts - spring onions - taro - Canned corn - luncheon sausage - cottage cheese - takeaway milkshakes.

See [Food price index review: 2017 \(revised\)](#) for more information.

Sample size

About 19,000 prices were collected from 560 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.

Expenditure weights are updated every three years as part of regular FPI reviews. The weights are derived largely from the 2012/13 Household Economic Survey (HES). We also used information from food manufacturers and distributors, and supermarket scan data from The Nielsen Company.

FPI weights are based on household spending for the year to June 2016 (the 'weight reference period') expressed in September 2017 prices (the 'price reference period').

More information on the relative importance of FPI subgroups, classes, and selected sections can be found in table 6 of each food price releases' tables.

Collection methods

Prices are surveyed by visiting retail outlets in 12 urban areas: Whangarei, Auckland, Hamilton, Tauranga, Napier-Hastings, New Plymouth, Palmerston North, Wellington, Nelson, Christchurch, 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 560 outlets in the 12 surveyed urban areas. Of these, about 60 are supermarkets, 30 greengrocers, 20 fish shops, 30 butchers, 60 convenience stores (with about half being service stations and the rest being dairies, grocery stores, and superettes), 110 restaurants (for evening meals), and about 250 other suitable outlets (for breakfast, lunch, and takeaway food).

Statistics NZ collects prices from a sample of supermarkets in each of the 12 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 2013 as part of the rolling review of outlets.

See CPI rolling review of retail outlets for more information.

Accuracy of the data

Population weights

From the July 2014 FPI onwards, regional price change is weighted using regional expenditure weights for the five broad regions (Auckland, Wellington, rest of North Island, Canterbury, and rest of South Island). This ensures that price change in regions where households spend more per person on a particular item relative to other regions. For broad regions with multiple pricing centres (rest of North Island and rest of South Island), we use population shares to allocate the regional expenditure weight to the pricing centres.

Previously, we used national expenditure weights in each of the (then) 15 regional pricing centres, weighted by the centre's population share. This change was recommended by the 2013 CPI Advisory Committee (recommendation 6) and aligns with international best practice.

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 12 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

Index base

The FPI now 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. The previous reference period was June 2006 month (=1000). This was done so that series that had fallen to 2 digits would have a higher level of clarity. For example, an index that moves from 11 to 10 requires a 9 percent fall in price, compared to an index moving from 1000 to 999 that only needs a 0.1 percent change. Due to the rebase date and implementation date being different, a few periods after the rebase have decimal places. This is to ensure the percent changes released remain consistent.

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 over a review period, note that the quarterly food group index number is not the average of the relevant three-monthly FPI numbers. Where there are changes to food basket items, prices for new CPI basket items would be collected in April, May and June (to apply the price change between the June and September quarters), whereas prices for new FPI items are collected for June (to apply the price change between June and July months).

The FPI has a monthly price reference period, and the prices for the June month can differ from the average of the April, May and June months. As a result, the monthly and quarterly base weights can differ, even though the same annual quantities were used.

Interpreting the data

Seasonal adjustment

The 2013 CPI Advisory Committee recommended we add analytical seasonally adjusted series to our publications. We produce an analytical series where the FPI (and CPI) are seasonally adjusted at the all groups, group, subgroup, and class levels. The headline FPI remains unadjusted. We have seasonally adjusted using direct adjustment rather than indirect since this produced better quality statistics. Indirect seasonal adjustment occurs when individual component series of the main aggregate series are seasonally adjusted, then aggregated to derive totals. For example, an indirect seasonally adjusted fruit series would be compiled by adding all the seasonally adjusted series (for apples, pears, kiwifruit, etc) together. Direct seasonal adjustment occurs when seasonal adjustment is done at the aggregate level, independently of seasonally adjusting the components. A direct seasonally adjusted fruit series would be made up by adjusting the aggregate of all the unadjusted series (for apples, pears, kiwifruit, etc). We use the x13 ARIMA-SEATS package to run our seasonal adjustment.

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.

Related Materials

Other

- [Food Price Index: March 2020](#)

Variables

FPI published variables March 2020

Name	Range
SE9011	
SE901101	
SE901102	
SE9012	
SE901201	
SE9012011	
SE9012012	
SE9012013	
SE9012014	
SE9012016	
SE901202	
SE9013	
SE901301	
SE9013011	
SE9013012	
SE9013013	
SE9013014	
SE9013015	
SE9013016	
SE901302	

Name	Range
SE9013021	
SE9013022	
SE9013023	
SE9013024	
SE9013025	
SE9013026	
SE901303	
SE901304	
SE901305	
SE901306	
SE9014	
SE901401	
SE901402	
SE9015	
SE901501	
SE901502	
SE901	

FPI weighted prices published variables March 2020

Name	Range
SAP0100	
SAP0101	
SAP0102	
SAP0103	
SAP0104	
SAP0105	
SAP0106	
SAP0107	
SAP0108	
SAP0109	
SAP0110	
SAP0111	
SAP0112	
SAP0113	
SAP0114	
SAP0115	
SAP0116	
SAP0117	
SAP0118	
SAP0120	
SAP0121	
SAP0123	
SAP0122	
SAP0124	
SAP0125	

Name	Range
SAP0126	
SAP0127	
SAP0128	
SAP0129	
SAP0130	
SAP0131	
SAP0132	
SAP0134	
SAP0136	
SAP0137	
SAP0138	
SAP0139	
SAP0140	
SAP0142	
SAP0143	
SAP0144	
SAP0145	
SAP0146	
SAP0147	
SAP0148	
SAP0149 - Bread - white sliced loaf	
SAP0151 - Dried apricots	
SAP0152 - Avocado	
SAP0153 - Baby food	
SAP0154 - Beans	
SAP0155 - Bread rolls, filled, hot	
SAP0156 - Hamburger buns	
SAP0157 - Breakfast drink	
SAP0158 - Burger	
SAP0159 - Soup, canned	
SAP0160 - Capsicums	
SAP0161 - Cauliflower	
SAP0162 - Celery	
SAP0164 - Cheese, camembert	
SAP0165 - Cheese, processed slices	
SAP0166 - Chicken, cooked, whole	
SAP0167 - Chicken pieces	
SAP0168 - Chicken, whole, frozen	
SAP0169 - Chicken nuggets	
SAP0170 - Chilled fruit juice	
SAP0172 - Chocolate, boxed	

Name	Range
SAP0173 - Chocolate, blocks	
SAP0174 - Chocolate, novelty bar	
SAP0176 - Corn flakes	
SAP0177 - Corned beef	
SAP0178 - Courgettes	
SAP0179 - Crackers	
SAP0180 - Cream	
SAP0181 - Cucumber	
SAP0182 - Dessert, frozen	
SAP0183 - Flavoured drink powder	
SAP0184 - Dried pasta	
SAP0185 - Drinking chocolate	
SAP0186 - Milk, calcium enriched	
SAP0187 - Fish fillets, frozen	
SAP0188 - Flat bread	
SAP0189 - Eggs, free range	
SAP0190 - Fresh fish	
SAP0191 - Fresh pasta	
SAP0192 - Takeaway chicken	
SAP0193 - Berries, frozen	
SAP0194 - Grapes	
SAP0195 - Coffee, ground	
SAP0197 - Honey	
SAP0198 - Hot chips	
SAP0199 - Hummus dip	
SAP0200 - Ice block	
SAP0201 - Ice cream	
SAP0202 - Ice cream, novelty	
SAP0203 - Infant formula	
SAP0204 - Jam	
SAP0205 - Kumara	
SAP0207 - Mandarins	
SAP0208 - Mussels, marinated	
SAP0209 - Meat pies, chilled	
SAP0210 - Mixed vegetables	
SAP0211 - Muesli	
SAP0212 - Muesli bars	
SAP0213 - Mussels, live	
SAP0214 - Sandwich	
SAP0215 - Olive oil	
SAP0216 - Onions	

Name	Range
SAP0217 - Orange juice	
SAP0219 - Packaged cake slice	
SAP0220 - Parsnips	
SAP0221 - Packaged meal	
SAP0222 - Pasta sauces	
SAP0223 - Pastry sheets, frozen	
SAP0224 - Pears	
SAP0225 - Pineapple pieces	
SAP0226 - Pineapple	
SAP0227 - Plain biscuits	
SAP0228 - Potato fries, frozen	
SAP0229 - Prawns, frozen	
SAP0230 - Prepared meals, frozen	
SAP0231 - Pumpkin	
SAP0232 - Roasting lamb and hogget	
SAP0233 - Roasting pork	
SAP0234 - Salad, packaged	
SAP0235 - Salami	
SAP0236 - Salmon, canned	
SAP0238 - Soft drink, poured	
SAP0239 - Soft drink, bottle	
SAP0240 - Soy milk	
SAP0241 - Soy sauce	
SAP0242 - Sports energy drink, bottle	
SAP0243 - Sports energy drink, can	
SAP0244 - Two minute noodles	
SAP0245 - Peanut butter	
SAP0246 - Sweets	
SAP0247 - Cakes and biscuits, takeaway	
SAP0248 - Coffee, takeaway	
SAP0249 - Cookie, takeaway	
SAP0251 - Muffin, takeaway	
SAP0252 - Pizza, takeaway	
SAP0253 - Salad, takeaway	
SAP0254 - Tea, takeaway	
SAP0256 - Tomatoes, canned	
SAP0257 - Vinegar	
SAP0258 - Bread, wheatmeal	
SAP0259 - Bread, wholemeal	

Name	Range
SAP0260 - Fresh herbs	
SAP0261 - Olives	
SAP0262 - Tea bags, flavoured	
SAP0263 - Pizza, fresh or frozen	
SAP0264 - Margarine	
SAP0265 - Mayonaise	
SAP0266 - Dried mixed herbs	
SAP0267 - Peanuts	
SAP0268 - Ham	
SAP0269 - Chewing gum	

Concepts

Food Price Index

Name	Description
Food Price Index	<p>Food Price Index</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)](https://www.stats.govt.nz/methods/food-price-index-review-2020) 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>Price Index</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>Expenditure weights</p> <p>Expenditure weights give the relative importance of the food goods and services in the FPI basket.</p>
Outlet weights	<p>Outlet weights</p> <p>Outlets are given appropriate weights to reflect their relative importance in terms of household spending.</p>
Index reference	<p>Index reference</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>Seasonally adjusted series</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.