

New Zealand

A: Identification

Title of the CPI: Consumer Price Index

Organisation responsible: Statistics New Zealand

Periodicity: Quarterly and Monthly (food group only)

Price reference period: June 2006 Quarter

Index reference period: June 2006 quarter

Weights reference period: 2010

Main uses of CPI: Indexation of wages, pensions and/or social security payment, indexation of rents, contracts and/or other payments, main inflation indicator used for monetary policy and deflate household expenditures in national accounts.

B: CPI Coverage

Geographical Coverage

Weights: Nation-wide

Price collection: Nation-wide

Population coverage: Resident households of nationals and resident households of foreigners in the country.

Population groups excluded: Institutional households (2%).

Consumption expenditure includes:

- Food consumed away from home;
- Purchase of owner-occupied housing;
- Housing maintenance, minor repairs;
- Second hand goods purchased (second hand cars only);
- Luxury goods;
- Financial services (including fees for financial advice, brokerage fees);
- Non-life insurance premiums (e.g. vehicle, housing, other property, medical), gross of claims;
- Life insurance premiums;
- Licences and fees (e.g. driver's licence, hunting licence, vehicle registration);
- Social transfers in-kind of goods and services from government and No-profit institutions serving households

Consumption expenditure excludes:

- Foods produced for own final consumption;
- Other goods produced for own final consumption;
- Services produced for own final consumption;
- Income in-kind receipts of goods;
- Income in-kind receipts of services;
- In-kind goods received as gifts;
- In-kind services received as gifts;
- Mortgage repayments;
- Mortgage interest;
- Major repairs, conversions and extensions to owner occupied housing;
- Purchase of gifts of goods and services given to others outside the household;
- Interest payments (excluding mortgage interest payments);
- Gambling expenditure, gross of winnings;
- Investment-related expenditures (e.g. purchase of shares/stocks);
- Occupational expenditures;
- Other business-related expenditures;
- Expenditures abroad

C: Concepts, definitions, classifications and weights

Definition of the CPI and its objectives: The consumer price index (CPI) measures the changing price of a fixed basket of goods and services purchased by New Zealand households. The selection and relative importance of the goods and services in the CPI basket represents the overall expenditure pattern of private New Zealand households.

Definition of consumption expenditures: Acquisition approach is used.

Classification: COICOP (Classification of individual consumption by purpose), but modified for New Zealand use.

Weights include value of consumption from own production: No

Sources of weights: Household expenditure surveys, national accounts, consumer surveys, industry data, other government departments, New Zealand census, retail trade survey and customs data.

Frequency of weight updates: Every 3-5 years

Price updating of weight reference period to the index reference period: The expenditures in the weight reference period are price-updated to the price-reference period. This is done by applying price changes from the CPI to the expenditure. Whenever new goods and services are added to the basket, a substitute price index is selected, based on best judgement of how the prices have moved. For some specific products, the weights are also volume adjusted, to account for changes in purchasing behaviour between the weight reference period and the price reference period.

Weights for different population groups or regions: No

D: Sample design

Sampling methods:

Localities: Judgmental sampling

Outlets: Simple random, stratified sampling with simple random sampling in each stratum, judgmental sampling, cut-off sampling (the elements with the highest sales or value of other auxiliary variable are included into the sample).

Products: Judgmental sampling

Frequency of sample updates:

Localities: Periodically

Outlets: Continuous (on a rotating basis)

Products: Continuous (on a rotating basis)

If sample updates are irregular indicate when last updates were introduced: The sample of localities was last reviewed in 2006.

Criteria used for determining the optimal sample sizes and the coverage of localities, outlets, items and variety samples: Judgmental sampling is used based on extensive research (including analysis of variation in price changes), using a variety of data sources including the household economic survey, market research data, industry data, and consultation with users and external experts via regular revision advisory committees.

Criteria used for selecting an item variety in the outlet in case of loose specifications provided by the central office: If the specifications are loose, then the pricing officer chooses a specific item. This selection is guided by market share information. When the brand is considered less important to the consumers, a specification of “cheapest available” is used.

E: Data Collection

Approximate number of localities, outlets and price observations: Localities: 15, Outlets: 5,400, Price observations: 120,000

Frequency with which prices are collected: Weekly for fresh fruit and vegetables, motor fuels; Monthly for food and non-food groceries, eating out, cigarettes, alcoholic beverages, airfares; Annual for seasonal fashion items, school uniforms, primary, secondary and tertiary education, road user charges, local authority rates, water rates, cheque duty, solid fuel, outdoor furniture; Quarterly for the remainder of the basket.

Reference period for data collection: Weekly priced items are collected on Friday (where possible, Thursday in some localities). Monthly items are priced in the first and second week of each month. Quarterly postal prices are collected as at the 15th of the middle month of the

quarter. Quarterly field collected prices are collected on weekdays between the first and 15th of the middle month of the quarter. Annually priced items are priced with the corresponding quarterly collections.

Methods of Price Collection

- Personal data collection for retail items, and some services such as car repairs, funerals etc.
- Mailed questionnaires for construction of houses, legal fees, insurance, household services, medical services, taxi/shuttle and bus/train fares, recreational activity subscription charges and entry fees, tuition, housing rentals, etc.
- Internet for airfares and package holidays, digital products (games, movies, books), refuse collection, pharmaceuticals, contact lenses, telecommunications rates, postal charges, free-to-air digital television receivers, cut flowers, sports event and concert admission, tuition charges, and online auction fees.
- Official tariffs for official documents (birth certificates), vehicle registration, local authority rates, and transfer fees, government financial service charges, and student loan service charges.
- Industry data and administrative data for fuel discounting schemes and housing New Zealand rents.

Treatment of:

Discounts and sales prices: These are taken if they are available at the time of price collection and are not clearance prices.

Black market prices: Not collected unless selected by chance in postal surveys.

Second hand purchases: Included for second-hand motor cars only. All sales of vehicles to households from a sample of dealers are included in a hedonic model to calculate the index. There are high net purchases of used cars by the household sectors, due to imports from Japan.

Missing or faulty prices: Carry forward the last observed price and class mean imputation for some items.

Disappearance of a given type or quality from the market: If a product is permanently missing, up to three suitable replacements are selected and, the back prices of the replacement product are collected when available. The “best” replacement product is based on similarity to the missing product and the market share, and is selected in the central office from the available options. If no suitable replacement can be found at that outlet, a new outlet is selected.

Quality differences: Quality adjustments are undertaken whenever a quality change is detected in a product being priced, so that the index reflects only the pure price change. When prices are collected, data is collected on the quality, quantity and other relevant features to enable accurate quality adjustments when required.

Explicit quality adjustments: Procedures to account for changing pack sizes. A common example of a quality adjustment is related to a change in pack size. For example, tea bags usually sold in boxes of 100 bags may come with 10 percent extra due to a promotion run by the distributor. In this case, consumers receive the benefit of an extra 10 bags, hence the recorded price would be adjusted to reflect the value to the consumer of the extra tea bags. Similarly, 'quantity specials' are also taken into account. For example, if a loaf of white bread was \$2.00 in March 2011, and three loaves of white bread were \$4.80 in April 2011 (the single price remained \$2.00), then the price per loaf has decreased from \$2.00 to \$1.60, hence a 20 percent fall in price would be shown. These promotions are usually temporary, and the price might revert back to \$2.00 in May 2011, at which point the price series is adjusted again. Such quantity specials are used only where they are considered to be representative of the quantities likely to be purchased by households.

New cars: Prices for new cars are one area where explicit quality adjustments are applied. When distributors report changes to the models being sampled, Statistics NZ asks for the 'perceived' dollar value of these changes to customers. To ensure the adjustments are consistent, they are checked against records of previous adjustments. When there are changes to the engine, Statistics NZ estimates the value of the quality change, based on maximum power and torque. The values of all changes between the two models are combined – in practice, this sometimes means an improvement and a removal of a feature cancel each other out. Most quality adjustments to new car prices are made to remove the effect of improved or additional features, which increases the quality of the vehicle. In these cases, the value of the changes is removed from the retail price of the updated model to generate the quality adjusted price. If, on the other hand, the quality adjustment is due to a removed or diminished feature, the value of the changes is added to the retail price of the updated model. In the 10 years from 2001 to 2011, most adjustments for lower quality were due to reductions in engine power or torque.

Option cost method: A method used for some products, is to base quality adjustments on the market value of optional features, or a proportion of the market value of optional features. This method is used for desktop computers.

Hedonic regression models: Statistics NZ uses a statistical technique called hedonic regression to calculate the price index for used cars. The method was implemented in the September 2001 quarter. A used car can be seen as comprising a bundle of price-determining characteristics. Once these characteristics are identified and measured, the hedonic function can be interpreted as breaking down the car's price into the implicit prices and quantities of each characteristic. The price index can then be derived from the estimated price over time, after controlling for the changing quality composition of the cars being sold from quarter to quarter.

Implicit quality adjustments: For some products, quality is implicitly controlled by calculating price change based only on products which are available in consecutive time periods. The 'product or outlet change' section described methods used when products are unavailable. If a product is unavailable for two consecutive time periods, and it is deemed unlikely to be stocked again, then a suitable replacement product, identified at the first instance of unavailability, will be used as a permanent replacement. Any difference in price between the original and the replacement products is assumed to reflect a difference in quality. This technique is called the 'overlap' method. For rapidly changing products, such as flat-panel television sets, a quality assessment is required whenever a model is superseded

and replaced. The 'comparable replacement' method is used when the replacement product is judged to be very similar in quality to the old product, such as a newer model with only small superficial changes. In this case, any change in retail price between the old and new models is shown in the price index. When the replacement is judged to be of different quality to the old product, the method used is to infer the pure-price movement from products that are directly comparable from within the same geographic region as the product being replaced. This is called the 'class mean imputation' method.

Appearance of new items: New items are considered for inclusion based primarily on expenditure shares and are introduced at the three-yearly reviews of the basket and weights. New items (“revolutionary” rather than “evolutionary”) are occasionally introduced between three-yearly reviews and are handled on a case-by-case basis. Updated versions of previously available items are included during the between-review period by reweighting the elementary aggregates based on available expenditure data.

Treatment of seasonal items and seasonality

Items that have a seasonal character and their treatment: Clothing, fresh fruits and vegetables, airfares and accommodation have a seasonal character. No seasonal adjustments are made in the New Zealand CPI. Until June 2006, prices were seasonally adjusted for fresh fruit and vegetable prices. Fresh fruits, vegetables, airfares and accommodation are all have fixed weights and price collection continues throughout the year. Seasonal fashion, such as summer skirts and winter jackets, are priced annually at the beginning of the summer and winter fashion ‘seasons’. The pricing officers aim to collect the latest version of the seasonal items. The weights are kept constant throughout the year.

Seasonal food items: Seasonal food items are included in the CPI using fixed weights approach: the weights are kept constant over the year, while prices of out-of season products are estimated or imputed.

Seasonal Clothing: Seasonal clothing items are included in the CPI using fixed weights approach: the weights are kept constant over the year, while prices of out-of season products are estimated or imputed.

Method to impute the price of seasonal items: The method used to impute price development in out-of season periods is carrying forward the last observed price.

Treatment of housing

Treatment of owner-occupied housing: Under the net acquisition approach, the expenditure weight allocated to purchase of housing represents the value of the net increase in the stock of owner-occupied housing during the weight reference period. Expenditure on newly constructed dwellings by owner-occupiers is included, as are any net shift between owner-occupied dwellings and rental properties, and alterations and additions to established owner-occupied dwellings. The expenditure weight is based on a 3-year average, rather than the one-year expenditure. The method used in the 2006, 2008, and 2011 CPI reviews involved applying an average new private dwelling value to the estimated net change in the number of owner-occupied dwellings, then adding an estimate of owner-occupiers' share of the value of residential building additions and alterations to established dwellings. Each quarter, respondents are asked to provide a quote for a house plan that they build fairly regularly.

Weighted arithmetic mean prices are calculated for each broad region with each quote representing the number of consents issued per year to the master builder, rated up to reflect all consents issued to master builders and to other builders. Mortgage interest payments are not included in the main CPI index. They are included in a released analytical series called “CPI all-groups plus interest”.

Types of dwellings covered by the rent data: Rent data include: (a) private and local authority rentals, (b) State rentals and (c) educational accommodation. (a) Only unfurnished properties are included in the sample, so as to exclude any impact of quality change in furnishings. Rental information (rent and rent frequency) and number of bedrooms are collected quarterly from landlords in the sample. At the March 2012 quarter, there were around 1,200 respondents for the Quarterly Rental Survey, providing rents for around 2,700 dwellings. Average weekly rent for each dwelling type – one, two, three, four, and more than four bedroom dwellings – is calculated for each of five broad regions (Auckland, Wellington, the rest of North Island, Christchurch, and the rest of South Island). The quarterly price movements used in the calculation of the CPI are based on a matched sample of rental dwellings that are common to both the current and previous quarters, to help ensure that changes in the size or composition of the sample of dwellings does not affect the CPI; (b) Direct contact is made with Housing New Zealand Corporation (HNZC) for the price indicator for state rentals. Information is obtained each quarter on the geographic location of each dwelling, number of bedrooms, market rent and income-related rent. As direct contact is made with HNZC, a full list of about 65,000 properties is obtained and monitored on an ongoing basis; (c) Fees are collected by postal survey from about 40 secondary school boarding hostels.

F: Computation

Formula used for calculation of elementary indices: The ratio of arithmetic mean prices (Dutot index) (Direct form) and the ratio of geometric mean prices (Jevons index) (Direct form)

Formula to aggregate elementary indices to higher level indices: Laspeyre’s formula.

Formula of aggregating regional/population group indices into national index: Regional average prices from each of the 15 regions are combined into the New Zealand index for each item. Price-updated expenditure shares (based on population weights for each region) are summed to create a national product total. The movements in this total are used to calculate a New Zealand index. Each region is assumed to have the same spending pattern i.e. national expenditure weights are used in each region. The exceptions to this are reticulated gas and suburban rail services which are not available in all regions. The 2011 weights were derived by assigning the usually resident population of each regional council area (at June 2010) to the CPI pricing centre(s) within the region. Three regional council areas, Bay of Plenty, Manawatu-Wanganui, and Canterbury, have two pricing centres each. The proportion of the regional council area population allocated to each pricing centre was based on the population of the pricing centre's territorial authority. Four regions do not have a pricing centre. Their populations were allocated to the nearest pricing centres. The Gisborne region's population was allocated to the Napier-Hastings pricing centre, and the Marlborough, Tasman, and West Coast regions were allocated to the Nelson pricing centre.

Monthly and annual average prices: Calculated by applying index movements to weighted average prices, calculated using either the Jevons or Dutot formula, for the June 2006 month or quarter. These are not statistically accurate measures of average transaction price levels, but do provide a reliable indicator of percentage changes in prices.

Seasonally adjusted indices: No

Software used for calculating the CPI: GIFT (Generalised Index Facility Toolbox) – a custom system developed by Statistics New Zealand.

G: Editing and validation procedures

Control procedures used to ensure the quality of data collected: When the prices are collected, they are compared to the previous prices, and any large changes are confirmed with the outlet staff. For postal surveys, central office staff contacts respondents by telephone if there are any queries. Before data is entered into the computer system, it is examined closely by staff in the central office. They check for unusually large movements up or down, movements against the trend, and places where a quality adjustment may need to be made or data-entry errors may need to be corrected. Each region is assigned to a different editor for each price collection period, to ensure there is consistency in this process. There are weekly quality assurance meetings to discuss and resolve any issues encountered. Where adjustments are made, calculations and implementation into GIFT are peer-reviewed.

Control procedures used to ensure the quality of data processed: There are four quality gates in data processing. 1) Micro-edits and macro-edits: In a micro-edit, prices for each individual price collection are compared to the prior pricing period. Each commodity has an acceptable movement range (tolerance). Any item which moves by more than its allowed tolerance is checked. A macro-edit is also used to check fruit and vegetable prices, as well as the top ten CD and book prices. Each price is compared with the average price for that specific item. Outliers are checked and corrected if need be; 2) The regional average prices are generated for each commodity. These regional averages are checked against each other and the national average for unusual movements; 3) The index is calculated and each item's index point contribution is assessed. This is based on the weight of the item and the size of the price movement. Any unusual movements are checked and any needed corrections are made; 4) The entire data set is evaluated in several meetings. Weekly quality assurance meetings are held to discuss and resolve any issues. A data confrontation meeting is held before each release. This meeting confronts the movements in the index with real-world events, and to check that they make sense and tell a consistent story. Where adjustments are made, calculations and implementation into GIFT are peer-reviewed.

H: Documentation and dissemination

Timeliness of dissemination of the CPI data: Release is on the 12th working day of the first month after the reference quarter. There is a 2-month lapse between the quarterly collections and release, and a 1-month lapse between the last monthly pricing and release and a 2-week lapse between the last weekly pricing and release.

Level of detailed CPI published

Online: All items CPI, Division-level (12 Divisions), Group-level app. 40 groups, Class-level (100 classes), Average prices

Restricted Access: Basic items, Average prices

Separate indices published for specific population groups: No

Type of products for which average prices are calculated and disseminated: Food products, alcoholic beverages and tobacco products, socks, pantyhose, dry-cleaning services, a range of household maintenance products, non-food grocery items, examinations by medical professionals, motor fuel, car battery and road worthiness inspection, postage, CD of one of the current top 10 albums, overnight DVD movie hire, printer paper, hairdressing services.

Documentation

Publications and websites where indices can be found: As soon as embargo is lifted, the information and media releases related to the CPI can be found online:

http://www.stats.govt.nz/browse_for_stats/economic_indicators/CPI_inflation/info-releases.aspx. All index time series released are available online

<http://www.stats.govt.nz/infoshare/> under “Economic Indicators” and then “Consumers Price Index – CPI”. Reporters and the public are invited to a media conference for each publication, and the results are usually available in the next hard-copy publication the largest newspapers in the country – Dominion Post and the New Zealand Herald. The key results are usually available on the online editions of these websites as soon as embargo is released (for example stuff.co.nz).

Publications and websites where methodological information can be found: Consumers Price Index: March 2012 quarter – available online, with all associated tables: http://www.stats.govt.nz/browse_for_stats/economic_indicators/CPI_inflation/ConsumersPriceIndex_HOTPMar12qtr.aspx. Methodological information can be found here: http://www.stats.govt.nz/tools_and_services/services/newsletters/price-index-news/CPI-sources-and-methods.aspx

I: Other Information

Reported by the country in 2012.