

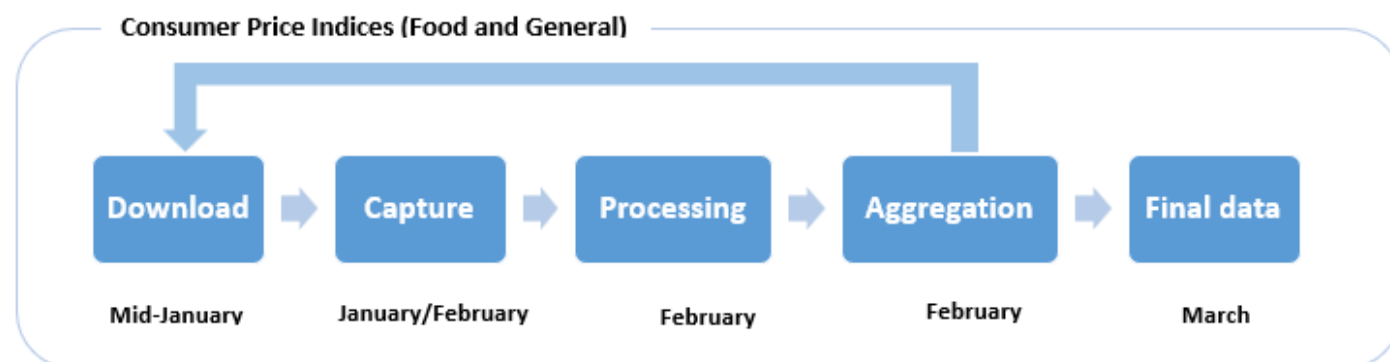
Food and General Consumer Price Indices Methodology

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Workflow Overview

The Food and General Consumer Price Indices (CPI) are monthly indices, published on a quarterly basis. The steps and timeline involved in the production of the CPI domain follow a specific process and it is the same for each publication (March, June, September and December). As an example, the process for the first quarter (March) is presented in the following scheme:



Step 1: Download

The download step performs data download from the following sources and saves them as "Original Data":

1. **IMF:** General Consumer Price Index
<http://data.imf.org/?sk=5DABAFF2-C5AD-4D27-A175-1253419C02D1&ss=1390030341854>
2. **IMF:** Consumer Price Index of Food and non-alcoholic beverages
<http://data.imf.org/?sk=4FFB52B2-3653-409A-B471-D47B46D904B5&slid=1485878855236>
3. **UNSD:** Food and non-alcoholic beverages and General Consumer Price Indices
<https://unstats.un.org/unsd/mbs/app/DataSearchTable.aspx>
4. The Organization for Economic Co-operation and Development (**OECD**)
https://stats.oecd.org/Index.aspx?DataSetCode=PRICES_CPI#
5. Central Bank of Western African States (**BCEAO**)
<https://edenpub.bceao.int/index.php#>
6. Eastern Caribbean Central Bank (**ECCB**)
<https://www.eccb-centralbank.org/statistics-category/other-real-sector>
7. **National statistical offices websites:**

Country	Official Statistics website
Afghanistan	http://nsia.gov.af/services
Åland Islands	https://www.asub.ax/en/statistics/consumer-price-index
Albania	http://databaza.instat.gov.al/pxweb/en/DST/
Algeria	https://www.ons.dz/spip.php?rubrique124
Andorra	https://www.estadistica.ad/portal/apps/sites/#/estadistica-en
Angola	https://www.ine.gov.ao/publicacoes/filtro/1/Tudo/Tudo/IPC/Tudo/Tudo
Anguilla	http://statistics.gov.ai/StatisticsDept/ConsumerPriceIndex
Antigua and Barbuda	https://statistics.gov.ag/subjects/consumer-price-index/

Argentina	https://www.indec.gob.ar/indec/web/Nivel4-Tema-3-5-31
Armenia	https://armstatbank.am/pxweb/en/ArmStatBank/ArmStatBank_1%20Economy%20and%20finance_12%20Consumer%20Prices/?rxid=c169b79c-9f82-4878-a96a-9e404a9f976b,c169b79c-9f82-4878-a96a-9e404a9f976b
Aruba	https://cbs.aw/wp/index.php/2019/04/26/tables-cpi/
Australia	https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release#data-download
Azerbaijan	https://www.cbar.az/page-40/statistical-bulletin
Bahamas	https://www.bahamas.gov.bs
Bangladesh	http://www.bbs.gov.bd/site/page/29b379ff-7bac-41d9-b321-e41929bab4a1/-
Barbados	https://stats.gov.bb/subjects/economic-statistics/retail-price-index/
Belize	https://sib.org.bz/statistics/economic-statistics/consumer-price-index/
Bermuda	https://www.gov.bm/bermuda-business-statistics
Bhutan	https://www.nsb.gov.bt/publications/price-statistic/consumer-price-index/
Bolivia (Plurinational State of)	https://www.ine.gob.bo/index.php/graficos-ipc/
Bosnia and Herzegovina	http://www.bhas.ba/Calendar/Category/
Botswana	https://www.statsbots.org.bw/prices-statistics
	https://botswana.opendataforafrica.org/PROB2015V1/botswana-consumer-price-index
British Virgin Islands	http://www.bvi.gov.vg/statistics?title=&field_stats_category_tid=701
Brunei Darussalam	http://www.deps.gov.bn/SitePages/Consumer%20Price%20Index.aspx
Burundi	https://www.isteebu.bi/icp/
	https://isteebu.bi/indices-des-prix-a-la-consommation/
Cabo Verde	https://ine.cv/en/?s=IPC&post_type=all

Cambodia	https://www.nis.gov.kh/index.php/km/20-cpi/31-cpi-tables
Cameroon	https://nso-cameroon.opendataforafrica.org/opsgebf/indice-des-prix-%C3%A0-la-consommation-par-fonction-coicop
Cayman Islands	https://www.eso.ky/indicators_page.html#2
Chad	https://www.inseed.td/index.php/component/jdownloads/category/6-documents-et-publications?start=0
	https://chad.opendataforafrica.org/nspjjyc/indice-des-prix-a-la-consommation
China, Hong Kong SAR	https://www.censtatd.gov.hk/en/scode270.html#section2
Comoros	http://www.inseed.km/
Croatia	https://web.dzs.hr/PXWeb/Menu.aspx?px_language=en&px_type=PX&px_db=Cijen e
Curaçao	https://www.cbs.cw/prices-tables
	https://www.cbs.cw/inflationprices
Cyprus	https://www.cystat.gov.cy/en/SubthemeStatistics?s=47
Djibouti	http://www.ministere-finances.dj/IPC.html
	http://www.instad.dj/ipc.php
Dominica	https://stats.gov.dm/subjects/consumer-price-index/
Ecuador	https://www.ecuadorencifras.gob.ec/indice-de-precios-al-consumidor/
Egypt	www.capmas.gov.eg
Equatorial Guinea	https://inege.gq/index.php/estadisticas/#36-indice-de-precios-ipc
Fiji	https://www.statsfiji.gov.fj/statistics/economic-statistics/summary-of-consumer-price-index12.html
French Polynesia	https://www.ispf.pf/publication
	http://www.ispf.pf/bases/Indices/Indicedesprixlaconsommation/DonneesIndicesDetailles.aspx

Gabon	https://statgabon.ga/
Gambia	https://gambia.opendataforafrica.org/pfqlcic/consumer-price-index
Georgia	https://www.geostat.ge/en/modules/categories/26/cpi-inflation
Ghana	https://www.statsghana.gov.gh/nationalaccount_macros.php?Stats=MTE2MTIyMjQ5Ni41NjY=/webstats/7163p83s71
Greenland	http://bank.stat.gl/pxweb/en/Greenland/Greenland_PR/PRXPRISV.px/?rxid=5e8b3aca-fcce-4b2e-a287-7b9ce9a71fa9
Guatemala	https://www.ine.gob.gt/ine/estadisticas/bases-de-datos/indice-de-precios-al-consumidor/
Guinea	https://www.stat-guinee.org/index.php/publications-ins/publications-infra-annuelles/ihpc
	https://guinea.opendataforafrica.org/inxkpab/harmonized-consumer-price-index
Guinea-Bissau	https://www.stat-guineebissau.com
India	https://www.pib.gov.in/indexd.aspx
Indonesia	https://www.bps.go.id/indicator/3/2/1/consumer-price-index-general-.html
Iran	https://www.amar.org.ir/english/SCI-News-Archive/articleType/ArchiveView/year/2023
Jamaica	https://statinja.gov.jm/Trade-Econ%20Statistics/CPI/NewCPI.aspx
Japan	https://www.e-stat.go.jp/en/stat-search/files?page=1&query=coicop&layout=dataset&toukei=00200573&metadata=1&data=1
Jordan	https://jorinfo.dos.gov.jo/Databank/pxweb/en/DOS_Database/START_15/CPI_T1/
Kazakhstan	https://stat.gov.kz/edition/publication/month
Kenya	https://www.knbs.or.ke/data-releases/
	https://kenya.opendataforafrica.org/tuflusb/consumer-price-index
Kiribati	https://nso.gov.ki/statistics/economy/cpi/
Kuwait	https://www.csb.gov.kw/Pages/Statistics_en?ID=34&ParentCatID=3

Lebanon	http://www.cas.gov.lb/index.php/economic-statistics-en/cpi-en
Liberia	https://www.lisgis.net/index.php
Libya	https://www.bsc.ly/#
Madagascar	https://madagascar.opendataforafrica.org/otovlvf/consumer-price-index?lang=en
Malawi	http://www.nsomalawi.mw/index.php?option=com_content&view=article&id=186&Itemid=37
Maldives	https://statisticsmaldives.gov.mv/cpi/
Malta	https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_A5/Price_Statistics/Pages/Retail-Price-Index.aspx
Micronesia (Federated States of)	https://www.fsmstatistics.fm/economics/consumer-price-index/
Moldova	https://statbank.statistica.md/PxWeb/pxweb/en/40%20Statistica%20economica/40%20Statistica%20economica_05%20PRE_PRE010_serii%20lunare/PRE012300.px/?rxid=8e69070f-3ac5-4b22-ab66-eab8ee8cc25a
Montenegro	https://monstat.org/eng/page.php?id=26&pageid=26
Myanmar	http://mmsis.gov.mm/sub_menu/statistics/statDbList.jsp?vw_cd=MT_ZTITLE&self_id=195_003
Namibia	https://nsa.org.na/page/publications/
Nepal	https://www.nrb.org.np/category/economic-bulletin/?department=red
New Caledonia	https://www.isee.nc/economie-entreprises/economie-finances/prix-a-la-consommation
Nigeria	https://nigerianstat.gov.ng/elibrary?queries=cpi
	https://nigeria.opendataforafrica.org/NGNBSNCPIR2017/cpi-and-inflation-report-december-2018
Oman	https://data.gov.om/OMPRCINX2017/price-index?regions=1000000-oman
Pakistan	https://www.pbs.gov.pk/nsdp
	https://www.sbp.org.pk/publications/Inflation_Monitor/index2.htm

Palau	https://www.palau.gov.pw/executive-branch/ministries/finance/budgetandplanning/consumer-price-index-cpi/
Papua New Guinea	https://www.nso.gov.pg/statistics/economy/consumer-price-index/
Peru	https://www.inei.gob.pe/estadisticas/indice-tematico/economia/
	https://www.inei.gob.pe/biblioteca-virtual/boletines/informe-de-precios/1/
Philippines	https://psa.gov.ph/price-indices/cpi-ir
Puerto Rico	https://indicadores.pr/dataset/indice-de-precios-al-consumidor/resource/8000e26b-fe31-4b2a-8197-9aed6922edae
Qatar	https://www.psa.gov.qa/en/statistics1/pages/topicslisting.aspx?parent=Economic&child=Priceindices
Republic of North Macedonia	https://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/MakStat_Ceni_IndeksTrosZivot/120_CeniTr_Mk_IndTroZi_ml.px/table/tableViewLayout2/?rxid=46ee0f64-2992-4b45-a2d9-cb4e5f7ec5ef
Romania	http://statistici.insse.ro:8077/tempo-online/#/pages/tables/inse-table
Saint Lucia	https://www.stats.gov.lc/subjects/economy/prices-and-price-indices/
Saint Vincent and the Grenadines	https://stats.gov.vc/subjects/prices-and-price-indices/consumer-price-index-cpi-monthly-bulletins/
Samoa	https://www.sbs.gov.ws/economics
San Marino	https://www.statistica.sm/pub1/StatisticaSM/en/Dati-statistici/Prezzi-e-retribuzioni/Prezzi.html
Sao Tome and Principe	https://www.ine.st/index.php/component/phocadownload/category/78-ipc-ano
Saudi Arabia	https://www.stats.gov.sa/en/394
Seychelles	https://www.nbs.gov.sc/statistics/consumer-price-indices
	https://www.nbs.gov.sc/downloads/economic-statistics/consumer-price-index
Sierra Leone	https://nso-sierraleone.opendataforafrica.org/kiwibig/consumer-price-index
	https://www.statistics.sl/index.php/cpi.html

Singapore	https://www.singstat.gov.sg/find-data/search-by-theme/economy/prices-and-price-indices/visualising-data/consumer-price-index-dashboard
Solomon Islands	https://www.statistics.gov.sb/press-releases
Somalia	https://somalia.opendataforafrica.org/ownvtkc/consumer-price-index
South Sudan	https://nbs.gov.ss/
Sri Lanka	http://www.statistics.gov.lk/InflationAndPrices/StaticInformation/MonthlyNCPI
Suriname	https://statistics-suriname.org/consumenten-prijs-indexcijfers-en-inflatie/
Syrian Arab Republic	https://cbssyr.sy/cpi-2019-EN.htm
	https://www.cb.gov.sy/index.php?page=list&ex=2&dir=publications&lang=1&service=8&act=560
Thailand	http://www.price.moc.go.th/en/content1.aspx?cid=1
Timor-Leste	https://inetl-ip.gov.tl/?s=Consumer+Price+Index&submit=
Tonga	https://tongastats.gov.to/statistics/economics/consumer-price-index/
Trinidad and Tobago	https://cso.gov.tt/subjects/economic-indicators/retail-price-index-rpi/
Tunisia	http://www.ins.tn/en/statistiques/90
Uganda	https://www.ubos.org/explore-statistics/30/
Ukraine	http://www.ukrstat.gov.ua/imf/arhiv/isc_e.htm
	https://bank.gov.ua/en/statistic/macro-indicators#1
United Arab Emirates	https://fcsc.gov.ae/en-us/Pages/Statistics/Statistics-by-Subject.aspx#/%3Fsubject=Economy&folder=Economy/Prices/Consumer%20Price%20Index
United Republic of Tanzania	https://www.nbs.go.tz/index.php/en/consumer-price-index-cpi
Uzbekistan	https://stat.uz/en/
	https://stat.uz/en/press-releases/34346-2023-2

	https://stat.uz/en/official-statistics/prices-and-indexes
Vanuatu	https://vnso.gov.vu/index.php/en/statistics-by-topic/cpi-news
Venezuela (Bolivarian Republic)	http://www.ine.gov.ve/index.php?option=com_content&view=category&id=108&Itemid=62
Yemen	www.cso-yemen.com/content.php?lng=arabic&cid=144
Zambia	https://www.zamstats.gov.zm/publications/
Zimbabwe	https://www.zimstat.co.zw/
	https://zimbabwe.opendataforafrica.org/xqjvwob/national-summary-data-page-nsdp

Additional data sources for filling data gaps:

1. United Nations Conference on Trade and Development (UNCTAD): Annual General CPI

<https://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=37469>

2. UNdata:

- Annual Food CPI:

<http://data.un.org/Data.aspx?q=consumer+price+index+datamart%5bIFS%2cLABORSTA%5d&d=LABORSTA&f=tableCode%3a7C>

- Annual General CPI:

<http://data.un.org/Data.aspx?q=consumer+price+index+datamart%5bIFS%2cLABORSTA%5d&d=LABORSTA&f=tableCode%3a7A>

Step 2: Data Capture

The capture step aggregates all disparate excel files downloaded in step 1 from the Original Data sources in two files (one for General CPI and another for food CPI). The major steps are outlined below.

- a. Captures the Food and General CPI from the Organization for Economic Co-operation and Development (OECD) for OECD countries, from the Central Bank of Western African States (BCEAO) and from the Eastern Caribbean Central Bank (ECCB) for the countries they are covering.
- b. Captures Food and General CPI from the International Monetary Fund (IMF) for the remaining countries.

- c. Capture Food and General CPI from UNSD for data points not covered in IMF.
- d. Capture Food and General CPI from the Official Statistics Websites for filling the gaps of missing data.
- e. For Countries that only publish quarterly data, the data are stored in their respective month (CPI of quarter 1 in March, CPI of quarter 2 in June, CPI of quarter 3 in September and CPI of quarter 4 in December). And for the countries that have Annual CPI in some years, the data are stored in December. And other countries have biannual CPI data, stored in January and in July.
- f. The base year of Food and General CPI in UNSD database is provided along with the downloaded file, and the IMF base year is provided in the following link:
<http://data.imf.org/regular.aspx?key=61015892>.
- g. Annual General and Food CPI are captured from UNdata from 2000 to 2008 and Annual General CPI is captured from UNCTAD from 2000 to 2020 (the Annual CPI data are stored in December of every year), Monthly CPI are imputed in this period using Linear Interpolation for filling data gaps for some countries¹.

Two output files are generated (one for General CPI and another one for food CPI) and fed into the processing stage.

Step 3: Processing

3.1. Rescaling to the unique base 2015

The processing stage performs rescaling of the General and Food CPI data to a unique base year of 2015.

We use the following formula to rescale the base year to 2015²:

$$\text{Monthly CPI in month } t \text{ with base year 2015} = \frac{\text{Monthly CPI in month } t}{\text{geometric mean of the Monthly CPI in all months of 2015}} * 100$$

$$CPI_{t,y,base=2015} = \frac{CPI_{t,y}}{\sqrt[n]{\prod_{t=1}^n CPI_{t,y=2015}}}$$

where $CPI_{t,y} = CPI$ for month t and year y and $t = 1, 2, \dots, 12$

¹ <https://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=37469>

² International Labour Office (ILO), International Monetary Fund (IMF), Organization of Economic Co-Operation and Development (OECD), Statistical Office of European Communities (Eurostat), United Nations and the World Bank. 2004. "Consumer Price Index Manual – Theory and Practice". Available at: https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/presentation/wcms_331153.pdf

3.2. Imputation methodology for filling the data gaps

Missing values, both monthly and annual prices, can be imputed either according to the Holt-Winters method (Cipra et al., 1995), for which a standard routine of the smoothing technique is embedded in Excel, or by employing the *Linear, Spline or stineman* interpolation method, through a routine in R.

1. Imputation using R function “impute_lm” from “simputation” R package

We used the Linear Regression Imputation package (simputation) to backcast and impute missing values of Food CPI of countries having only annual Food CPI using the General CPI as an explanatory variable.

Linear regression model imputation with impute_lm can be used to impute numerical variables based on numerical and/or categorical predictors.

The Syntax is: `impute_lm(dat, formula, add_residual = c("none", "observed", "normal"), na_action = na.omit,...)`

Arguments:

Dat	[data.frame], with variables to be imputed and their predictors.
Formula	Formulas are of the form: <code>IMPUTED_VARIABLES ~ MODEL_SPECIFICATION [GROUPING_VARIABLES]</code> The left-hand-side of the formula object lists the variable or variables to be imputed. The right-hand side excluding the optional GROUPING_VARIABLES model specification for the underlying predictor.
add_residual	Type of residual to add. "normal" means that the imputed value is drawn from $N(\mu, sd)$ where μ and sd are estimated from the model's residuals (μ should equal zero in most cases). If <code>add_residual = "observed"</code> , residuals are drawn (with replacement) from the model's residuals. Ignored for non-numeric predicted variables.
na_action	What to do with missings in training data. By default, cases with missing values in predicted or predictors are omitted.
...	Further arguments passed to <ul style="list-style-type: none">• lm for impute_lm• rlm for impute_rlm• glmnet for impute_en

2. Imputation using R function “na_interpolation” from imputeTS R package.

The function uses either linear, spline or stineman interpolation to replace missing values.

We used the *linear* interpolation which is a consistently well-behaved method of interpolation.

The function returns the values of an interpolating function that runs through a set of points in the xy-plane according to the algorithm of Stineman (1980).

The syntax is: `na_interpolation(x, option = "linear", maxgap = Inf, ...)`³

Arguments:

- X Numeric Vector ([vector](#)) or Time Series ([ts](#)) object in which missing values shall be replaced
- Option Algorithm to be used. Accepts the following input:
- "linear" - for linear interpolation using [approx](#)
 - "spline" - for spline interpolation using [spline](#)
 - "stine" - for Stineman interpolation using [stinterp](#)
- Maxgap Maximum number of successive NAs to still perform imputation on. Default setting is to replace all NAs without restrictions. With this option set, consecutive NAs runs, that are longer than 'maxgap' will be left NA. This option mostly makes sense if you want to treat long runs of NA afterwards separately.
- ... Additional parameters to be passed through to [approx](#) or [spline](#) interpolation functions

According to Stineman, the interpolation procedure has the following properties:

1. If values of the ordinates of the specified points change monotonically, and the slopes of the line segments joining the points change monotonically, then the interpolating curve and its slope will change monotonically.
2. If the slopes of the line segments joining the specified points change monotonically, then the slopes of the interpolating curve will change monotonically.

Suppose that the conditions in (1) or (2) are satisfied by a set of points, but a small change in the ordinate or slope at one of the points will result conditions (1) or (2) being no longer satisfied. Then making this small change in the ordinate or slope at a point will cause no more than a small change in the interpolating curve.”

The method is based on rational interpolation with specially chosen rational functions to satisfy the above three conditions.

³ <https://www.rdocumentation.org/packages/imputeTS/versions/3.2/topics/na.interpolation>

Stineman states that "The complete assurance that the procedure will never generate 'wild' points makes it attractive as a general-purpose procedure".

3. Forecasting future values using the excel function "FORECAST.ETS" (EXPONENTIAL TRIPLE SMOOTHING)

Future values of CPIs are forecasted based on existing (historical) values, by employing a practical double-exponential smoothing method, including trend features, using the Holt-Winters (HW) method (Cipra, 1992) for seasonal series. Beyond the smoothing parameter α , the HW method includes one more parameter accounting for trend, specified according to the following general formulation adapted from Tularam and Saeed (2016):

$$f_t = \alpha_1 \pi_t + (1 - \alpha_1)(f_{t-1} + \beta_{t-1}), \text{ with } 0 < \alpha_1 < 1;$$

$$\beta_t = \alpha_2(f_t - f_{t-1}) + (1 - \alpha_2)\beta_{t-1}, \text{ with } 0 < \alpha_2 < 1;$$

in which f_t is the forecast, α_1 is the smoothing parameter, β_t and β_{t-1} are the estimated trend parameters, and α_2 is the smoothing parameter for the trend estimates. The parameters are chosen to minimize the in-sample sum of squared forecast errors.

The predicted value is a continuation of the historical values in the specified target date, which should be a continuation of the timeline. This function can be employed to predict future sales, inventory requirements, or consumer trends.

The syntax is: FORECAST.ETS(target_date, values, timeline, [seasonality], [data_completion], [aggregation])⁴

Step 4: Aggregation General and Food CPI

In this process we aggregate the General and Food CPI to a Global, Regional, Sub-Regional level according to the UNSD-FAO M49 classification:

- World
- Africa (Southern Africa, Western Africa, Northern Africa, Middle. Africa, Eastern Africa)
- Americas (Latin America and the Caribbean, and Northern America)
- Latin America and the Caribbean (South America, Central America, Caribbean)
- Northern America
- Asia (Central Asia, Eastern Asia, South-Eastern Asia, Western Asia, Southern Asia)
- Europe (Southern Europe, Eastern Europe, Northern Europe, Western Europe)
- Oceania

⁴ <https://support.microsoft.com/en-us/office/forecast-ets-function-15389b8b-677e-4fbd-bd95-21d464333f41>

The regional Food and General CPI are calculated using 2 different statistical methods:

1. A weighted average of food and general CPI of countries under each region using the weights of Household final consumption expenditure (including non-profit institutions serving households) in 2015 in USD at constant prices of 2015. Household final consumption expenditure is available under <https://unstats.un.org/unsd/snaama>, in table “GDP and its breakdown at constant 2015 prices in US Dollar”.
2. Median of food and general CPI values in every month of countries under each region.

Step 5: Final Data and Publication

This activity occurs by the end of each quarter, March, June, September and December.

The above steps produce the Consumer price Indices file which contains two items: the General CPI and the Food CPI, at country and regional levels. This final step separates the processed variable and their associated flags into the proper domains for publication in FAOSTAT.

The CPI database is updated on a quarterly basis. All updates follow the same steps as described above. Updates are published in June, September and December.

Analytical Report on Annual Inflation of General and Food CPI:

Annual Analytical brief of Food and General CPI at the end of the first Quarter, and a general overview of Food and General CPI at the end of second, third and fourth quarters, available on <http://www.fao.org/food-agriculture-statistics/data-release/economics/en/>

The analytical report highlights the annual inflation rates of regional Food and General CPI that are calculated using the Median of food and general CPI values in every month of countries under each region.

The annual inflation rates are calculated using this formula:

$$r_{(t,t-12)} = \left(\frac{CPI_t}{CPI_{t-12}} - 1 \right) * 100; \text{ where } t = \text{month}$$

References

1. Cipra, T., Trujillo, J., and Robio, A. (1995). Holt-Winters method with missing observations. *Management Science*, 41(1), 174-178.
2. Stineman, R. W. (1980). A consistently well-behaved method of interpolation. *Creative Computing*, 6(7), 54-57.
3. Tularam, G. A., & Saeed, T. (2016). The use of exponential smoothing (ES), Holts and Winter (HW) and Arima models in oil price analysis. *International Journal of Mathematics, Game Theory, and Algebra*, 25(1), 13.