

Analysing 2014 imports from Samoa by Tokelau's co-operative and bulk stores

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Abstract

This project analyses for the first time the invoices incurred in 2014 by the Tokelau co-operative and bulk stores. Each Tokelau atoll has only one of these stores: in Atafu, Nukunonu and Fakaofu. The initial aim was to get an idea of the volume of financial transactions between Tokelau and Samoa. Initial analysis of the detailed stores data showed imports from Samoa by the combined Tokelau stores amount to an average of NZ\$432,000 per month, or NZ\$5.2 million per annum.

Individual purchased items were coded using the international Classification of Individual Consumption According to Purpose (COICOP). A national list had been developed simultaneously for the Household and Expenditure Survey (HIES) that is currently taking place for the first time in Tokelau. Groups of commodities could be summarised, nett volumes and weights calculated, and characteristics of the Tokelauans' purchasing behaviour commented on.

Fuel purchased by the stores is discussed in relation to specific atoll needs and policies.

Some foodstuffs are paid attention to in relation to diet, and the top food imports are ranked.

Major areas of concern are the purchases of cigarettes and alcoholic drinks in relation to the known population aged 15 years and over. The observed consumption is explained in relation to different Taupulega (village council) policies.

Finally, products and packaging with an environmental concern in the Pacific are quantified.

Tokelau presents a unique situation in that most purchases go through the one co-op or single bulk store on each atoll. However, the figures presented do not capture the full basket of goods and services consumed. For example, there is no record in the invoices of trading in clothes, bread, and fresh fruit. Also missing are larger articles such as fridge-freezers and motor vehicles. These items tend to be parallel-imported directly by the villagers and do not feature in local stores' data.

Suggestions for further development of this analysis are given. Justification for repeating the analysis in 2016 is provided. The work contributes towards the development of regular International Merchandise Trade Statistics (IMTS) for Tokelau, which to date have been unavailable.

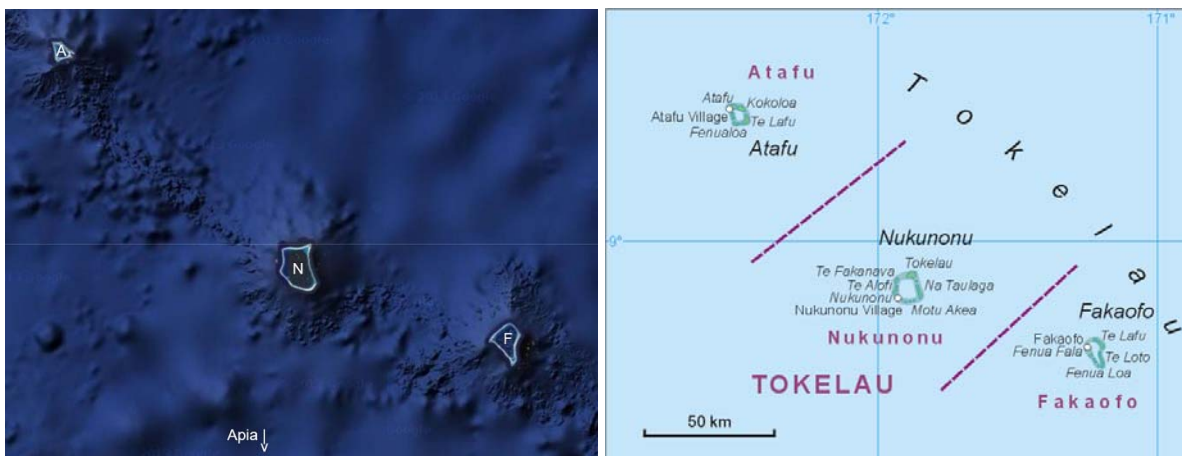
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INTRODUCTION

Context

The non-self-governing New Zealand territory of Tokelau comprises three atolls: Atafu, Nukunonu and Fakaofu. They lie about 500 kilometres north of Apia, Samoa; and 60-90 kilometres away from each other (see map). Apia is the nearest port to Tokelau; there is no air service to the islands. While the regular boat schedule from Samoa to Tokelau is fortnightly, in 2014 the true number of trips averaged out to about one per week. The journey takes a minimum of 24 hours' sailing from Apia.



By law (Statistics Rules 2013), the total population of Tokelau is determined by 5-yearly Census of Population and Dwellings, and also by a Population Count in the year preceding 3-yearly elections. The most recent number is 1,383 (2013 Population Count), with a population pyramid as shown.

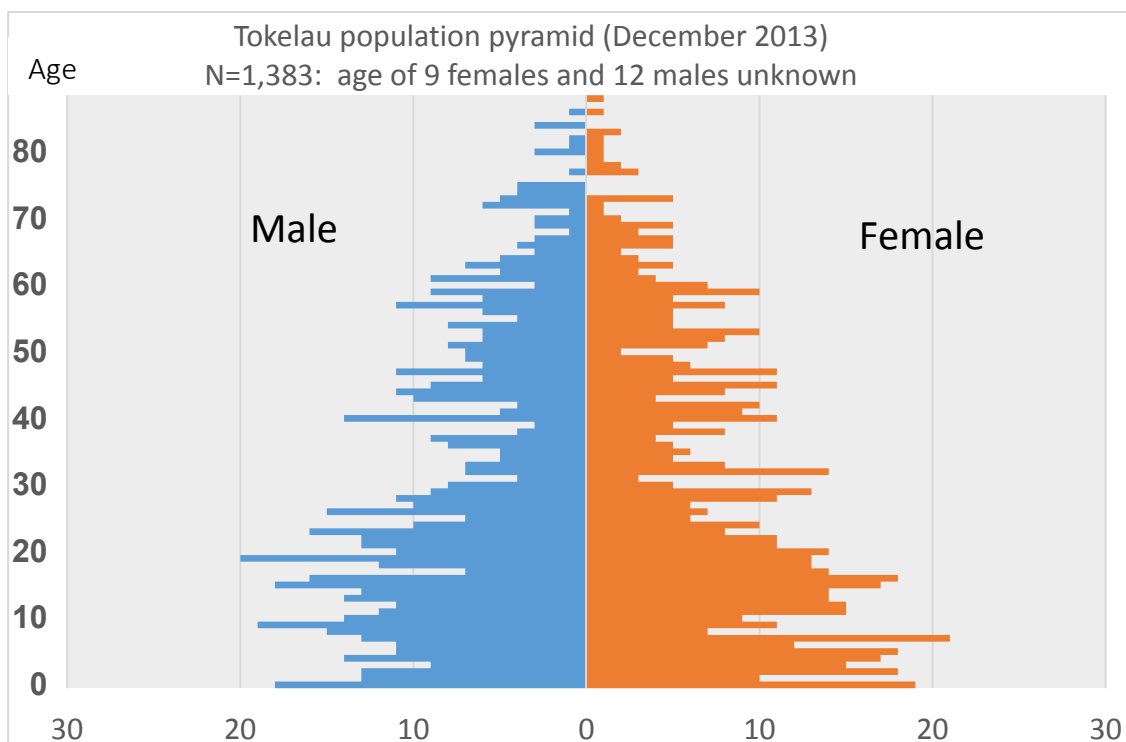




Plate 1: Top, the PB Matua at sea, and being loaded in Apia Harbour; Below, Offloading goods and people to the barge at Nukunonu. (2014/15)



Plate 2: Top, the co-operative stores at Atafu and Fakaofo, respectively; Below, Nukunonu store being restocked; and transfer of petrol for local use (2014/15).

Each atoll has effectively only one village, with a single co-operative store for food and household materials, plus a bulk store for building materials and fuel. Both the co-operative stores and the bulk stores are owned by the Taupulega, and run by public servants: there is no free market competition. The currency for Tokelau is the New Zealand dollar (NZD).

Shipping to Tokelau

There is a regular, approximately fortnightly boat service between Apia Harbour and Tokelau. The trip is a minimum of 24 hours' sailing to the nearest atoll, and 4-6 hours between atolls during calm weather. For normal service, the Passenger Boat *Matua* was used, at times supplemented by trips by *Lady Naomi*, *Samoa Express*, *Southern Phoenix*, and more recently the *Fasefulu*. A purpose-made ferry, *Mataliki*, is expected to take over in 2016.

In 2014, goods for the stores were generally loaded on to the ships' deck in Apia, and in Tokelau taken by barge to the villages. The stores themselves offer relatively little choice in food and household maintenance items. Goods for the bulk stores are generally custom orders for construction projects. Both for ease of cargo access, and to reduce the risk to passengers, petrol tends to be transported in special petrol runs.

Objectives

This project analyses, for the first time, all goods imported from Samoa by the Tokelau stores in 2014 from the Savalalo store of the Tokelau Apia Liaison Office (TALO). The initial objective was to gain a better insight into the volume of financial transactions between Tokelau and Samoa, for which to date no accurate information was available. In addition, and using COICOP coding, calculations could be made of nett weights and volumes of imports. As a result, a number of dietary, smoking, drinking habits of Tokelauans; and some environmental concerns could be addressed.

This document also represents the first step towards the development of a regular production and dissemination framework of International Merchandise Trade Statistics (IMTS) for Tokelau.

The project (Unit Standard 25440) counts towards a Certificate in Official Statistics (COS) from Statistics New Zealand (SNZ) and the New Zealand Qualification Authority (NZQA) during the 2015 calendar year. The document represents the "Shorter version" of a comprehensive report that will also include Cargo Manifests analysis (both Imports by, and Exports from Tokelau in 2014): in preparation.

METHODS

Research questions

This project seeks to quantify imports by the Tokelau co-operative and bulk stores from Samoa in one calendar year. The initial research question was:

RQ1. What was the value (in NZD) of such shipments in 2014, and how did they vary over time?

Given the detail of documentation obtained, supplementary questions could be investigated:

RQ2. What do the 2014 data tell us about the consumption patterns of Tokelauans in terms of food, alcohol and cigarettes, fuel, and household products?

RQ3. What are some environmental consequences of these imports?

Source material: Stores invoices

The finance section of the Savalalo store of the Tokelau Apia Liaison Office (TALO) collects orders from the atoll stores, packages the bulk orders, ships, and invoices the stores. Goods are generally purchased in Apia stores in Samoan tala (WST); local unit prices converted to New Zealand dollars (NZD), and freight charges, taxes and mark-up calculated as applicable. The sales are not for profit.

There is a general Government duty (cf Goods and Services Tax, GST) of 8 percent on all goods. Samoa Value Added Goods and Services Tax (VAGST) is reclaimed for the exports, so the villagers are not hit twice. There is an additional “sin tax” of 172% on small beer bottles (330 ml), 143% on large ones (750 ml), 146% on spirits and 195% on tobacco (July 2015 values). Cigarettes tax is likely to increase as part of a Pacific-wide initiative to reduce smoking hence non-communicable diseases.

Taupulega rules may provide for further mark-up of cigarettes and alcohol and has in some instances subsidised general food prices. This does not seem to be general or consistent practice.

Bulk stores generally do not pay government tax, and until mid-2014 in Atafu this applied also to fuel that was purchased through the bulk store. Petrol in Nukunonu and Fakaofu is charged through the co-op store, and these did attract duty and mark-up. This anomaly has now been rectified.

Copies of Excel spreadsheets were obtained for all 2014 shipments: the source files have a detailed worksheet for each store plus a summary invoice or “Tender” giving total amounts per atoll. A sample (part of Atafu co-operatives store invoice, 20 April 2014) is given in Appendix B1, as is the summary invoice for the entire shipment of that date.

Individual stores items from each shipment for each destination were carefully copied line by line (or the worksheet in full, with blank lines subsequently deleted), see Appendix B2. Pivot tables of prices for each destination by date were then compared to the totals from the “Tender”, to ensure no item was missed or duplicated. In each case there was an almost perfect match; indeed some source errors could be corrected in the process where this was not so. Eventually, there was only a \$0.17 rounding difference between the two accounting methods for the entire year’s total (\$5.2 million).

No distinction in the analysis is made as to where products attract extra tax or not. As is the case for calculation of the Consumer Price Index, the analysis is concerned only with final consumer prices – however the unit record data are stored such that analysis of nett costs etc. is possible if desired.

All available 2014 stores invoices were analysed for this project. Thus, some 4,675 items from 55 shipments were individually recorded and accumulated in an Excel spreadsheet (Supplement A). Various computations were made – mostly using pivot tables to summarise individual data – and graphs and overview tables prepared. All entry items were given a unique ID (line number) in Excel so that the data could be restored to their original sort order after data manipulation.

Little effort was made to correct the numerous spelling errors in the original order or product names, as the aim was to analyse COICOP groups (see below) rather than compile a tidy product overview.

Privacy and confidentiality

Tokelau’s population is small and to present the data for individual atolls could jeopardise the privacy of individual inhabitants. Therefore, all results presented in the tables and body of this report are presented at the national Tokelau level. For verification purposes, data allowing comparison of consumption on different atolls are provided in confidential appendices X and Y to this report, that are embargoed from wider circulation until 1 January 2018.

Data coding: The COICOP for Tokelau

All items in the invoice data were coded from the Tokelau version (Supplement B) of the international standard Classification of Individual Consumption According to Purpose (COICOP). This national list had been developed simultaneously for the Household and Expenditure Survey (HIES) that is currently taking place for the first time in Tokelau.

Codes for analysing the first six months of stores data were taken from the Samoan version of COICOP – developed for the 2013/14 Samoa HIES – and the generic Pacific COICOP – developed by the Secretariat of the Pacific Community (SPC).

Application of these codes led to refinements that were applied to the second set of six months' data - particularly at the commodity level of the 9-digit code comprising Division (2 digits), Group (1 digit), Class (1 digit), Subclass (3 digits), and Commodity (2 digits).

The full year's data were then reconciled to provide a Tokelau-specific COICOP, in particular with items at the commodity level reflecting atoll store products for sale. This COICOP was subsequently also used for the Tokelau HIES that started on Tuesday 12 May 2015 (and comprises 4 quarterly rounds of 2 weeks' data collection).

Nett volumes and weights by population segments

For most products sold in the co-op stores, nett weights and volumes of items were available in either metric and imperial measures. All units of weight, volume, and length were standardised to kilogrammes, litres, and metres using appropriate conversions¹:

A variety of foodstuffs, cleaning materials and some building materials could thus be calculated as total nett weight or volume. Rice, oil, baked beans, meat, chicken, cleaning agents, nappies, and eating utensils are products that the villagers are unlikely to import themselves, and totals could be ranked in order of volume or weight. These values were then converted to per capita measures, or to population segments as follows:

Segment of population (total=1,383 in December 2013)	Number in Tokelau	Percentage
• under-4-year-olds	116	8.4%
• fertile females 15-49 years old	284	20.5%
• males 15 years old and over	458	33.1%
• all 15- to 64-year-olds	852	61.6%
• adults 15 years old and over	949	68.6%

Parallel to the co-op and bulk store invoices, the Savalalo office of TALO also prepares Cargo Manifests for use by Tokelau and Samoa Customs officers. Such document report on gross volume and weight of cargo, but not on financial value. The intention is to also analyse these data using Harmonised System (HS) codes, towards developing a more complete IMTS.

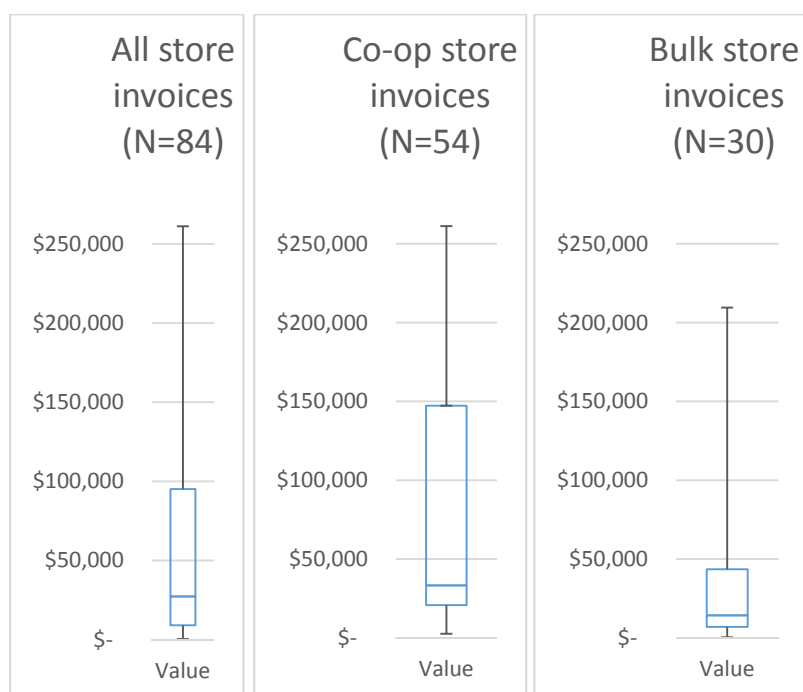
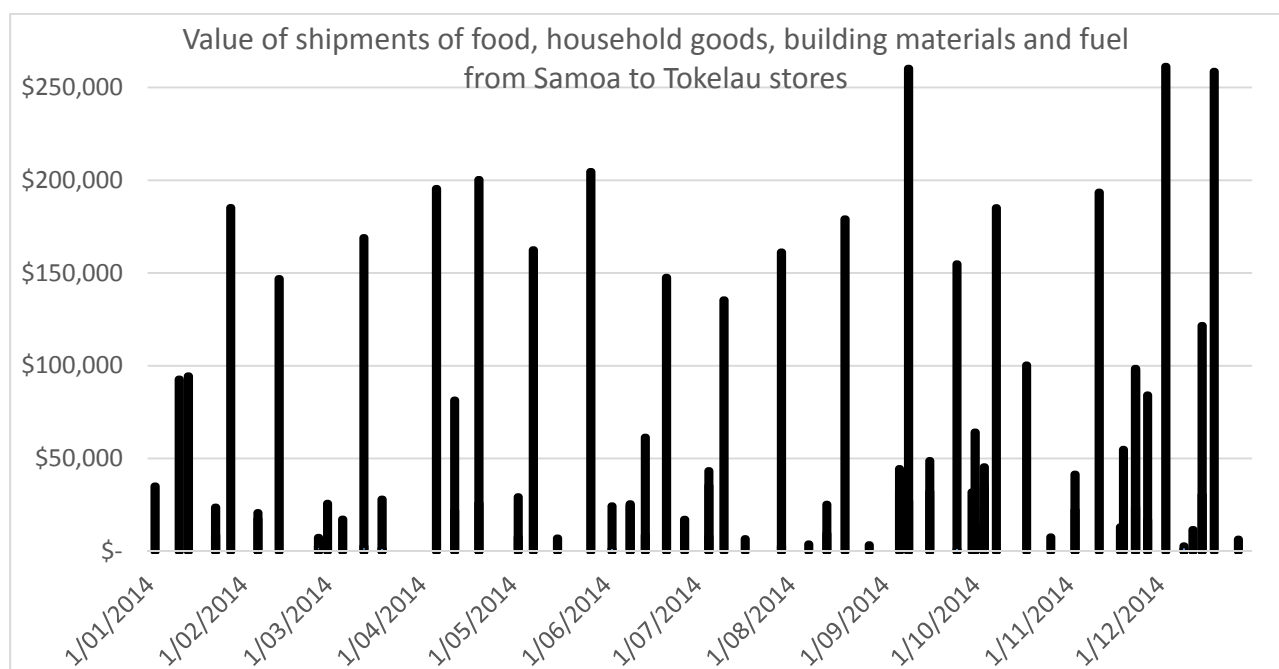
Comparing and matching stores invoices, cargo manifests, and official Samoan export figures to Tokelau imports (ie mirroring) will help complete the picture of flow of goods between the two countries. However, such an analysis is beyond the scope of the current project.

¹ foot (ft, ') = 0.3045 metres (m) ; gallon (imperial) = 4.546 litres (L); gallon (US gal) = 3.785 litres (L); inch (in, ") = 0.0254 metres (m); ounce (oz) = 0.0296 kilogrammes (kg); pound (lb) = 0.454 kilogrammes (kg); yard (yd) = 0.9114 metres (m)

RESULTS

Research Question 1. Financial

Initial analysis of detailed stores data shows exports to the combined Tokelau stores of NZ\$5.2 million per annum, or an average NZ\$432,000 per month. The value of invoices is illustrated below.



Above: Bar graph showing the 55 shipments throughout 2014, from Apia to the Tokelau co-op and bulk stores in terms of NZ\$ value, mark-up and transport included.

Left: The boxplots illustrate the distribution around a median value of NZ\$27.3k for all the invoices, with a mean \pm SD of NZ\$61.7 \pm 236. For the co-op stores, the median is NZ\$33.3k, with a mean \pm SD of NZ\$78.3 \pm 79.7; for the bulk stores, the median is NZ\$14.3k, with a mean \pm SD of NZ\$31.7 \pm 38.7.

Additional (non-store) cargo and transport of people do not feature in this analysis.

Appendix A shows the **cumulative** amount of invoice values; this representation is less subject to the randomness of shipment values. There is a strong, positive relationship with time (Appendix A).

There are no real deviations from a straight line as might be expected for big days on the social

calendar such as Easter March/April), Mother's day (mid May) and Father's day (mid-August), or children's White Sundays (mid October) and the public holiday Monday that follows these events. Note that the village stores mostly deal with food, household items, building materials and fuel – not clothes or presents that tend to be purchased more frequently around this time.

The figure shows an increase in the value of shipments nearer the end of the year, probably explained by extra Christmas food purchases (note again that 'luxury items' for presents are not normally purchased by the Tokelau stores, but parallel imported by individuals from Samoa). It is not clear if population swells around this time with visiting relatives: there may be more mouths to feed.

Research Question 2. Consumption patterns

Results from the analysis of the data focus on the key purchases made. COICOP codes are used below to quantify fuel, smoking and alcohol use. The top purchases of foodstuffs are paid attention to and average weekly consumption estimated.

COICOP and CPI

The detailed COICOP coding allows analysis of data using the various levels 1–5 (see page 6).

Using levels 1 (Division) and 2 (Group) alone gives a useful distribution of what Tokelauans spend their money on in the co-operative and bulk stores. We can compare this listing with the CPI group and sub-group weightings as shown in the CPI Technical notes (TNSO, December 2012).

Comparing 2014 stores expenditure by COICOP codes, with CPI group and sub-group weightings from the 2012 CPI Technical notes (the last two columns show absolute and relative percentage differences between 2012 weighting and 2014 stores columns). Only aggregate data for Tokelau are shown here; the detail per atoll is shown in Appendix X (confidential, embargoed). Revised 16/9/15.

COICOP Division and Group (group/subgroup in CPI)	2014 stores expenditure (NZ\$)	2014 stores expenditure (%)	2012 CPI weighting (%)	Difference in % points
1 Food and non-alcoholic beverages	\$1,987,398	37.94%	41.94	4.00%
1.1 Food	\$1,733,435	33.09%	36.35	3.26%
1.2 Non-alcoholic beverages	\$253,963	4.85%	5.59	0.74%
2 Alcoholic beverages and tobacco	\$1,391,140	26.56%	22.14	-4.42%
2.1 Alcoholic beverages	\$524,419	10.01%	5.59	-4.42%
2.2 Tobacco	\$866,721	16.55%	16.55	0.00%
3 Clothing and footwear	\$45,521	0.87%	1.10	0.23%
4 Housing, water, electricity, gas and other fuels	\$647,871	12.37%	9.70	-2.67%
5 Furnishings, household equipment and routine household maintenance	\$334,789	6.39%	5.73	-0.66%
6 Health	\$5,053	0.10%	n/a	
7 Transport	\$523,175	9.99%	9.19	-0.80%
8 Communication	n/a	n/a	4.94	
9 Recreation and culture	\$36,628	0.70%	n/a	
12 Miscellaneous good and services	\$266,688	5.09%	5.24	0.15%

The relative COICOP import shares and CPI weights resemble each other quite well, especially Division 12 which includes personal care products. In most Divisions, differences are only a few percentage points or less. Many families import bread in bulk from Samoa themselves, which is then transported in the ferry's freezer and redistributed.

The relatively large difference in Division 4 (Housing, ... fuels) can be explained by the inclusion of bulk store sales of materials for some major one-off construction projects in 2014.

It is not clear why the actual transport costs in 2014 exceeded the CPI estimate.

Access to phone lines and internet (Communications Division 8) is not purchased through the stores, but direct from the Teletok office in each island. There is as yet no mobile telephone system.

Items in the Recreation and culture Division 9 are minor. This Division is excluded from the CPI on practical grounds, as it often contains items for which price measurement can be difficult.

Note that Health care (Division 6) is free on all atolls, as is Education (Division 10). These items therefore feature hardly or not at all in the table.

With the exception of the small Luana Liki hotel in Nukunonu, there are no restaurants or hotels on the atolls; hence this Division 11 is also missing.

In terms of the next base period revision of the CPI, the expenditure weight for the Alcoholic beverages in Division 2 could be revised upwards, as it seems to be currently underestimated.

The Non-alcoholic beverages Group 1.2 may need to be revised down, in view of the fact that all non-alcoholic carbonated soft drinks have since 2014 been banned in all three villages – a reason for the WHO to present Tokelau with a special award in 2015.



Atafu school (L) and Nukunonu hospital (R). Tokelau health care and education are free.



On the schoolboat in Fakaofu, 2015.

Fuel

None of the islands has a significant number of motorised vehicles. There are some tractors, diggers, trucks and fork lifts for bulk goods shipment; plus a small number of private cars, golf carts, quad bikes and motorbikes. The bulk of petrol use however is by boats, mostly for fishing and transport.

While Atafu and Nukunonu have one village on their atoll, in Fakaofu the situation is different: Fale is the main village where most people live and where the churches are; the satellite village Fenuafala has a smaller number of houses plus the hospital and the schools. Particularly the latter require school children to be taken across daily by school boat or private fishing boat. Of the three atolls, Atafu has the smallest lagoon and Nukunonu the biggest.

Hence the difference in petrol purchased through the shops between Fakaofu (\$239k in 2014), Atafu (\$116k), and Nukunonu (\$169k) is significant and easily explained. These results provides a modicum of confidence in the suggestion that differences between villages for other items such as food, drinks and smokes are also real, not artificial.

Foods

Perhaps surprisingly, Tokelau has very limited agricultural production. Breadfruit grows in abundance in the villages, and coconut trees on all the motu (individual islands) of the atolls. Bananas tend to be imported. Only swamp taro is cultivated on Fakaofu in the satellite village Fenuafala, which has an underground freshwater table.

No fresh fruit and vegetables are grown, other than in some small gardens by a few enthusiastic individuals or NGO representatives. Potatoes, onions and carrots are imported in bulk; taro less so.

This low agricultural production statistic is in part explained by the poor soil, and the atolls are relatively dry (drinking water is generally taken from roof run-off) and in part because imports are too cheap to allow competitive small-scale domestic production. This leads to the strange situation where even commodities that can be grown locally, are imported.

A case in point is coconut cream that can be readily harvested, with some effort, from ripe coconut; but tends to be imported in tins – in fact, 2 tonnes of it in 2014 (1,989 kg = 4,680 tins of 425 g).

In terms of livestock, free-range chickens are common and pigs are kept in concrete pens at the edges of Atafu and Nukunonu; Fakaofu has a special motu (between Fale and Fenuafala) for pigs. Slaughter and consumption of these animals tends to be restricted to special occasions only.

Nett volumes and weights of foods

Conversion in the unit records (see p. 9) of imported weights and volumes to kilogrammes and litres allows a ranking of top food and drink items imported by the stores. The list of “top 40 solid food items” with nett weights over 1 tonne (1,000 kg) or 1 cubic metre (1,000 litres) is included as Appendix C. A few observations can be made as follows:

Rice (62.4 metric tonnes) appears to be the main starch staple food for Tokelauans, with potatoes (17.3 tonnes) coming second. Taro appear to play a much smaller part: they are not captured in the stores data at all. Other vegetables are Onions (8.0 tonnes) and Carrots (0.9 tonnes).

Chicken leg quarters (54.1 tonnes) are the main form of protein purchased in 2014 in the store by far, supplemented by Chicken wings (8.6 tonnes), Corned beef (7.1 tonnes), Salt beef (6.1 tonnes), Lamb chops (5.7 tonnes), Lamb necks (4.1 tonnes), Mutton flaps (3.7 tonnes), and various types of sausages (13.4 tonnes).

The presence of Mackerel in oil (8.1 tonnes) and of Tuna in oil (5.0 tonnes) is surprising given the large local fish catch – which is yet to be quantified in the current HIES.

Import of fresh fruit is significant only for Oranges (3.4 tonnes) and Apples (3.0 tonnes). Fruit salad (1.8 tonnes) appears popular although a poor alternative given its high sugar content.

In baking and cooking ingredients, the list is topped by Brown sugar (49.4 tonnes), Baker’s and normal flour (25.6 tonnes), and Cooking oil (21.0 cubic metres). Instant noodles are very popular (8.7 tonnes).

For the non-alcoholic drinks, Milk (49.2 tonnes) and Milk powder (4.7 tonnes) are followed by Bottled water (32.0 cubic metres), Just Juice (15.3 cubic metres), and Zap chocolate drink (12.9 cubic metres). Appendix C shows the dry ingredients reconstituted to drinkable volumes also.

To get an overall idea of individual consumption, the stores data for 2014 have been divided by the total population count (1,383). This may be an under-representation by including all babies, young children and elderly. Hence legal working age (15-64 years old, 852 individuals) may be a better population to estimate for. Weekly consumption ranges are derived from these ages also, with the top ten items shown in the table below.

Top ten solid food items (plus oil) purchased in 2014, per head of total population (quantity divided by Population count 2013 = 1,383) or working age population (15-64 years = 852); and average consumption range per head per week (= then divided by 52). Appendix C has a longer list, including non-alcoholic drinks, cleaning products, bulk store and miscellaneous items.

Food item (by rank)	Purchased in	Consumption 2014	per head (15-64y)	Average weekly consumption		
	2014	per head (all=1,383)	working age (=986)	from	to	Unit*
1 Rice	62,357	45.09	63.24	0.87	- 1.22	kg
2 Chicken leg quarters	54,085	39.11	54.85	0.75	- 1.05	kg
3 Brown sugar	49,350	35.68	50.05	0.69	- 0.96	kg
4 Flour, Baker's & Normal	25,575	18.49	25.94	0.36	- 0.50	kg
5 Cooking oil	20,952	15.15	21.25	0.29	- 0.41	litres
6 Potatoes	17,340	12.54	17.59	0.24	- 0.34	kg
7 Instant noodles	8,707	6.30	8.83	0.12	- 0.17	kg
8 Chicken wings	8,596	6.22	8.72	0.12	- 0.17	kg
9 Mackerel in oil	8,109	5.86	8.22	0.11	- 0.16	kg
10 Sweet biscuits	8,049	5.82	8.16	0.11	- 0.16	kg

Results of around 1 kg per person per week for rice, chicken legs, and sugar (and 2-3 eggs and pieces of bubble gum) per week, suggests these figures are in the right ballpark. Others may wish to use the data presented here to do a more exhaustive dietary analysis (outside project scope).

Alcohol

Alcohol use is of concern in Tokelau, as evidenced by the fact that all Taupulega have measures in place to limit its consumption. For example:

- Fakaofu has banned the sale of spirits but not of beer (daily, men only)
- Nukunonu store sells beer and spirits on Monday, Wednesday and Friday
- Atafu store sells beer and spirits on Monday, Thursday and Friday, with beer now limited to 2 large bottles for females and 3 large ones for males.
- Villagers must purchase their alcohol through the co-op stores and not on-sell it. They may now bring in two bottles of spirits upon arrival from Samoa.

These policies are reflected in the co-op stores' imports from Samoa in 2014 (Confidential and embargoed Appendix Y). For example, at 0.95 litres beer per week, Fakaofu has the lowest beer consumption per head of adult population (aged 15 years and over). However, assuming all imported alcohol is consumed by the male population, average consumption jumps to 2.09 litres per head. Atafu and Nukunonu adults consume 1.67 and 1.49 litres beer per week per adult on average, respectively.

The ban of sales of spirits in Fakaofu is clearly reflected in the import data. The value of imported spirits by the Fakaofu store was \$3.9k in 2014. For the Nukunonu's and Atafu's stores, values amounted to \$62.6k and \$129.1k, respectively. Again using the 15+ population, this indicates an

average weekly consumption of 10, 190 and 380 ml spirits in FF, NN, and AA respectively. However, spirits are parallel imported by a range of individuals on all three atolls - as can be demonstrated by analysing the shipping cargo manifests (anonymised, unpublished data).

Clearly there are issues of confidentiality and privacy at stake here, as the Taupulega rules may well be broken; and there may be implications for excise tax on these spirits items as well. All this is beyond the scope of the current research project, but may be taken up by the Finance Department.

Smoking

Analysis of Tokelau cigarette imports paints a picture that is rather disturbing from a national health perspective, at least compared to New Zealand where 15 percent of the adult population smokes (StatisticsNZ 2013). The stores data allow us to calculate average daily smoking rates (Confidential Appendix X).

From the December 2013 population count, we know there were 1,383 people in Tokelau, of which 949 were at or above the age of 15 years. In the Tokelau Census 2011, approx 50% of the 15+ population indicated they smoked regularly.

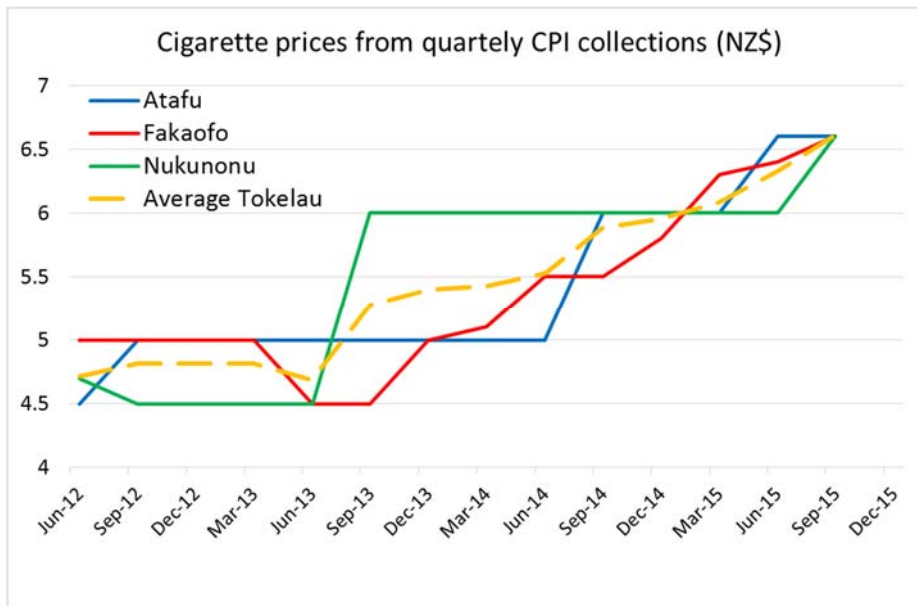
In 2014, the Tokelau co-op stores imported cigarettes with a total value of \$867k (COICOP Group 2.2). At an average price² of \$5.46 in 2014, this equals 158,830 packets of 20 cigarettes.

Using the above numbers, we can calculate average daily smoking rates. On average, the population of 15 and older in Tokelau smokes 167 packets or 3,347 cigarettes per head per year, or 9 cigarettes per day. Using the 50 percent smoking rate from the 2011 Census, the average regular smoker consumes 18 cigarettes per day.

There are differences in smoking averages between atolls (2 cigarettes a day away from the average) and it is hard to say if these differences are significant. However, using the same logic as applied to petrol (p. 11) one might presume it is: giving Fakaofu the lowest smoking rate, and Atafu the highest.

Differences are unlikely to be an artefact of small pricing differences, as shown by the time series of cigarettes over the period CPI prices have been collected.

² Compare this to WST10.00 (NZ\$5.55, packet of 20) in Samoa on 27 May 2015; and to NZ\$23.30 (packet of 25) in New Zealand in April 2015: http://www.stats.govt.nz/tools_and_services/newsletters/price-index-news/apr-15.aspx



Cigarettes now (September 2015 quarter) cost the same across Tokelau, which could be interesting in view of Dept of Health's recommendations to increase cigarette pricing to make smoking less attractive in future. See also: <http://www.wpro.who.int/southpacific/mediacentre/releases/2013/20130531/en/> and <http://www.wpro.who.int/mediacentre/releases/2014/20140528/en/>

Research Question 3. Environmental consequences

Generally poor waste disposal practices in Pacific islands have negative effects on island landscapes, oceans and their biota. In Tokelau, waste management has been identified as a priority and several measures for disposal are in place in the various villages. There is a Memorandum of Understanding (MOU) with Samoa by which the latter will take and dispose of solid waste shipped back in. Much of the rubbish however is still burnt on-atoll and some is left to pollute the environment.

Because of their very slow rate of decomposition, imported items of particular concern are plastic or foam plates (34,000), foam cups (63,000) and plastic spoons (35,000). Added to these numbers are approximately 125,000 plastic bowls of instant noodles imported in 2014. Also see the confidential and embargoed data in Appendix Y.

The 10,000 batteries with their high heavy-metal content are potentially also of major concern if not recycled. The 5,000 cigarette lighters are a worry, as are the approximate 74,000 plastic/aluminium wrappers of the Bongo snacks, and 55,000 minicartons of the Zap drink. While 143,000 pieces of bubble gum may not amount to much in terms of volume, they do persist with aesthetic damage to the environment when not disposed of properly.

Nappies present a major environmental issue in some Pacific countries. This is partly a result of high birth rates of infants in Pacific peoples. With a Tokelau 2013 Population Count of 116 children under the age of 4 (=8.4 percent!), the purchase of 123,000 nappies in 2014 is not surprising (i.e. on average 1,000 per infant per annum, or about 3 a day).

Similarly, the purchase of 17,000 ladies' sanitary pads fits the expectation (approximate fertile female population 15-49 years=284 women [including pregnant and nursing]: on average 5 pads per month). Once again the calculated result is in the right order of magnitude even if not precise. It is important to do such "reality checks" on data to avoid major errors (such as the Tokelau cigarette imports reputedly reducing from 5000/month in 2008 to 2000/month in 2012: that would be only about 5- 2 cigarettes per adult a month as calculated by Rush et al 2013: see Appendix Z for review).

Hair shampoo and conditioner add up to 6,000 bottles that need to be disposed of. The average size of 1 litre would add 31,000 water bottles and 21,000 cooking oil bottles to solid waste, respectively.

Just looking at those canned items with over 1 metric tonnes imported nett gives an estimated total of 72,000 tins (see table below). At an average weight of 40 grams per empty tin, this equates to 3 tonnes of metal waste in 2014 for these items alone.

Canned items with over 1 metric tonnes imported nett in 2014.

Product	2014 weight imported (kg)	Content per tin (g)	Number of tins
Mackerel in oil	8,109	444	18,264
Tuna in oil	5,007	185	27,065
Spaghetti	5,001	425	11,767
Coconut cream	1,989	425	4,680
Fruit salad	1,761	410	4,295
Condensed milk	1,224	395	3,099
Pineapple crush/slice	1,038	425	2,442
Total	24,129		71,612

For glass beer bottles there is currently a recycling scheme in place which has a cash incentive in the form of refunds per bottle in Samoa. Crushed metal waste is also sold to a Samoan recycling firm. General solid waste can be disposed of at the Tafaigata dump near Apia at regular costs per tonne.

No attempt is made here to further quantify the number of tins, cans, plastic containers and bottles in which all foods and drinks are sold. The Tokelau Department of Economic Development, Natural Resources and Environment (EDNRE) may wish to further peruse the data made available here.

All in all, the stores' imports into Tokelau present a potentially large environmental problem that eventually needs to be addressed in a sustainable way.

DISCUSSION

Outcomes

The present report reuses administrative data: comprehensive records of financial transactions (invoices) to the co-operative and bulk stores in Tokelau, for purchases in Samoa in 2014. The stores in Tokelau are unique in the sense that each of the 3 villages has only one of them, which provides the vast majority of regular household purchases. Some parallel imports do occur.

What started off as a financial investigation of spending by the island stores, developed into a sociological study of consumption by the Tokelau population of Atafu, Nukunonu, and Fakaofu.

We now know that about NZ\$5.2 million was purchased by the stores, which is the bulk of food, drink, smokes, household and building goods on sold to villagers.

While Taupulega as well as individuals are known to import goods independently of the stores, analysis of the shipping cargo manifests is beyond the scope of the current study.

Focussing on the present scope: Ranking of foodstuffs has been possible, and rates of smoking and alcohol consumption calculated. To the best of my knowledge only one other study of this nature exists concerning Tokelau, which has looked at shipping manifests of 2008 to 2012. However the “Rush report” has serious flaws as discussed in confidential Appendix Z.

A follow-up study (in prep) will look at manifests that are complete in terms of gross volumes and gross weights of goods shipped, but are much less accurate than the invoices to the shops which record nett volumes and nett weights. However for taxation purposes it is likely that alcohol and smoking data are complete in the manifests. I intend to more carefully compare manifest data of the two periods 2008-12 with 2014, and compare the latter to data in the bulk of the present report.

Several issues, such as some foods, alcohol, cigarettes, and solid waste, are already reasons for concern. The results need to be used sensitively and sensibly, yet can be of great value to the Tokelau government departments: for example as a baseline for the effectiveness of recent campaigns to reduce smoking in the communities; to keep tabs on alcohol use; in fighting non-communicable diseases such as obesity; and to monitor the environmental effects of solid waste and its disposal.

Limitations of the present analysis are that not all consumption patterns are captured in the co-op and bulk store records. For example, there is no record of trading in clothes, bread, fresh fruit, and larger articles such as fridge-freezers and vehicles (cars, motorbikes). Such items are parallel-imported by the villagers.

This raises some concern about the accuracy of the current quarterly CPI calculations, for which the majority of items in the “basket” is based on atoll store prices. The results presented on page 9 indicate that a reweighting of basket items could be in order. When rebasing the CPI basket upon completion of the HIES, greater note may need to be taken of price movements in Samoa. Indeed it may be necessary to develop a combined CPI figure for the two countries in case inflation rates are too different.

The HIES that is currently underway in Tokelau is expected to provide detailed and accurate data on all the villagers’ purchases in both Tokelau and Samoa (and beyond). Analysis of HIES data is unlikely to be completed before the second half of 2016.

This project (Unit Standard 25440) towards a Certificate in Official Statistics (COS) is necessarily limited in scope, and timeframe, and size. A large amount of data was collected and analysed, and is tentatively discussed. This was done in “spare time” alongside the daily activities of the Statistics Adviser in a National Statistics office with only 1.5 full-time equivalent (FTE) staff. Quarterly CPI is being calculated for Tokelau, the first-ever HIES is being conducted, and preparations for the next Census of Population and Dwellings prepared, to name but a few simultaneous duties.

Time precludes conducting a literature search to compare Tokelau data – particularly on health and environmental aspects – with those of other Pacific Island Countries and Territories. Of special interest would be Niue and Cook Islands, ie the other New Zealand Realm countries. This in itself would be a worthy future research project within the Tokelau government. The current report is expected to provide a useful baseline for such future comparisons.

[Unresolved issues and further possibilities of analysis](#)

It is recommended that the analysis of stores invoices, as carried out in this project, be repeated for the calendar year 2016: Not only will the HIES data be able to supplement the findings; a new ferry is due to be deployed by then. Given that the next Census of Population and Dwellings is due in October 2016, any results could be more accurately related to the actual, rather than the approximate, population in that year.

With the unit record files prepared as described above, further types of analysis can be done and may well be undertaken in subsequent work by the Tokelau National Statistics Office. The Tokelau Health Department may wish to join forces and further analyse the data on diet, smoking and alcohol use. The Department of Economic Development, Natural Resources and Environment will be

concerned with the waste data; the Finance Department with tax on parallel imports of spirits, and Taupulega with policy aspects thereof.

It is noted that the Annual shipping report for 2014 by the Samoa Bureau of Statistics (SBS, 2014) reports 47 ship departures from Apia to Tokelau, with an inward flow of 204 metric tonnes and an outward flow of 1,560 metric tonnes (the latter including 229 tonnes from a container vessel rather than general cargo). Such data could further be used to validate our own records, for example to reconcile shipping invoices and dates with actual trips made; and for comparing the outward goods and the inwards waste to be dumped in Samoa (see page 16).

A further attempt will be made to reconcile all nett volumes and weights (shop invoices using COICOP codes), with their gross equivalents (from Cargo Manifests using Harmonised System codes); and to put a financial value on all recorded items. While this is outside scope of the current project, this exercise has encouraged work in that direction. This will be documented in a more detailed report expected to be ready for peer review by the end of 2015.

Such work could provide valid IMT statistics for Tokelau, which to date have been unavailable.

Conclusions

Invoices to the Tokelau co-op and bulk stores provide a valid means to calculate to cost and volume of near-weekly imports from Samoa of most foods, household products, fuel and building materials.

Other than financial data, the results also indicate food and drink preferences by Tokelauans, and allow us to quantify weekly consumption to a realistically precise degree (Appendix C).

Cigarette smoking in Tokelau is high relative to NZ, with 50 percent of the population over 15 years of age smoking regularly; and those who smoke do so at a rate of almost a 20 cigarette-pack a day.

Alcohol consumption is also relatively high, but the stores data need further analysis and comparison with overall imports as recorded on shipping cargo manifests to be reliable.

High imports of packaged foods and household materials raise environmental concerns, as only glass beer bottles and metal waste from tins and cans is recycled, other solid waste being dumped in Tokelau and/or Samoa.

The data provided form a baseline for monitoring the effect of any health or environmental strategies that may be developed and implemented in future. They will also assist in validating the Household Income and Expenditure Survey currently underway in Tokelau; and for refining the quarterly Consumer Price Index calculation, by validating/improving the basket of goods and services.

The analysis presented is a first step in developing International Merchandise Trade Statistics for Tokelau. It is to be further developed by using 2014 cargo manifests, and possibly repeating the analysis with 2016 data in due course.

Acknowledgements

I thank the National Statisticians Kele Lui (Tokelau) and Sefuiva Reupena (Samoa) for the opportunity to participate in this Certificate in Official Statistics course 2015.

Thanks are also due to Asofa Fereti (Director) and staff of the Tokelau Transport and Support Services department, for freely making the research data (stores invoices and cargo manifests) available to me.

Earlier versions of this report have significantly benefited from comments by Neil Bechervaise (Assessor, NZQA), Emma Mawby (Education, Statistics NZ), Stuart Jones (IMTS, Statistics NZ), Ian Westbrooke (Principal Statistician, NZ Department of Conservation), and Rens Hendriks (Economist, Secretariat of the Pacific Community).

Any errors in the data analysis and interpretation are of course mine.

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Acronyms used and their meaning:

BEC	Classification in Broad Economic Categories
COS	Certificate in Official Statistics
CPI	Consumer Price Index
EDNRE	Economic Development, Natural Resources and Environment (Department
FTE	Full-time equivalent (staff)
GST	Goods and Services Tax (New Zealand)
HS	Harmonised System
IMTS	International Merchandise Trade Statistics
MOU	Memorandum of Understanding
NZD	New Zealand dollar
NZQA	New Zealand Qualification Authority
OCOG	Office of the Council for the Ongoing Government of Tokelau
SBS	Samoa Bureau of Statistics
SMT	Senior Management Team
SNZ	Statistics New Zealand
SPC	Secretariat of the Pacific Community
TALO	Tokelau Apia Liaison Office
TNSO	Tokelau National Statistics Office
VAGST	Value Added Goods and Services Tax
WST	Samoaan tala

Some Tokelauan terms

Aumaga – Working men’s association

Faipule – Member of Parliament for the Atoll

Fatufaepae – Women’s association

Nuku – Village

Pulenuku – Mayor

Taupulega – Village council

Ulu o Tokelau – Ceremonial Head of State (=by annual rotation of Faipule)

Appendices

Appendix A: Summary of tenders charged to the island stores, Jan-April 2014; and graph for 2014.

Appendix B: Source data for the analysis. Part 1, Co-op and bulk store invoices; Part 2, Example of unit record listing of stores invoices

Appendix C: Data on aggregate Tokelau top food import items. Part 1, Main food and household items purchased 2014 in kg; Part 2, Food items per head of total population (quantity divided by total population, and by working age population; plus average consumption per head per week (= then divided by 52).

Embargoed Appendices: Not to be distributed until 1 January 2018

These data are presented as evidence of statements made in the body of the report but not intended for wide distribution, so as to avoid compromising the identity of individual villages' consumption patterns.

Appendix X: Embargoed confidential COICOP data for the three atolls Atafu, Nukunonu, and Fakaofu. This table also illustrates smoking rates.

Appendix Y: Embargoed confidential alcohol data for the three atolls Atafu, Nukunonu, and Fakaofu.

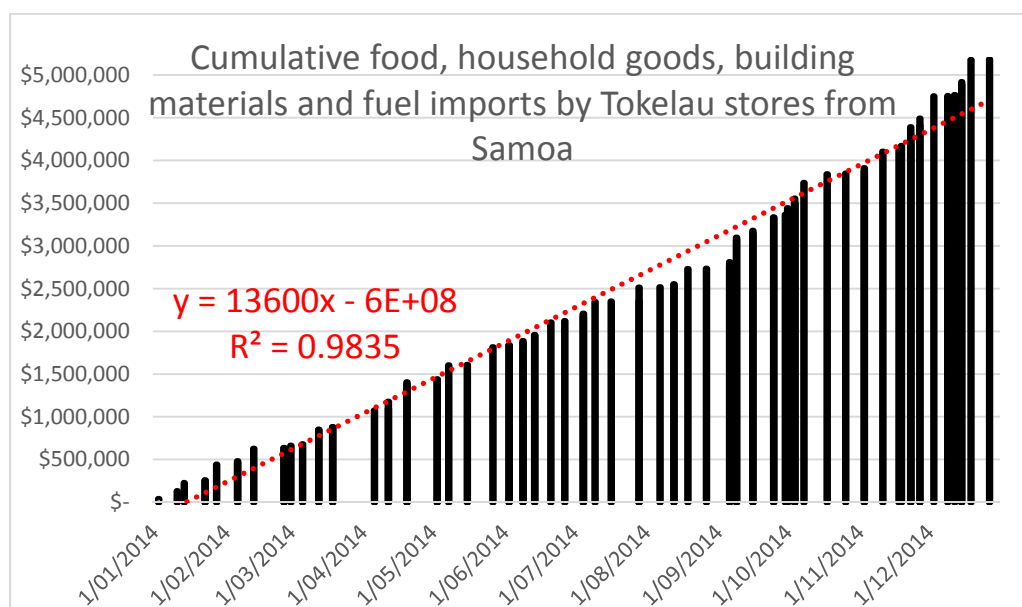
Appendix Z: Confidential evaluation of Rush, Pearce and Drewnowski (2013)

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Appendix A: Summary of tenders charged to the island stores, Jan-April 2014; graph for 2014 (p. 7).

b – bulk store only: up to July 2014, no duty or mark-up- was charged on petrol to Atafu bulk store.

[TENDER]	Shipment	Sum of COST NZD	Sum of Freight	Sum of Duty	Sum of Mark-up	Sum of SELL	Cumulative
TOTAL		\$ 1,404,771.33	\$ 112,381.72	\$ 419,840.04	\$ 182,006.01	\$ 2,118,999.07	
1	3/01/2014	\$ 26,633.72	\$ 2,130.70	\$ 2,130.70	\$ 3,995.06	\$ 34,890.18	\$ 34,890.18
2	11/01/2014	\$ 39,062.20	\$ 3,124.98	\$ 44,533.03	\$ 5,859.33	\$ 92,579.53	\$ 127,469.70
3	14/01/2014	\$ 62,747.66	\$ 5,019.81	\$ 17,086.32	\$ 9,412.15	\$ 94,265.94	\$ 221,735.65
4	23/01/2014	\$ 17,958.39	\$ 1,436.67	\$ 1,436.67	\$ 2,693.76	\$ 23,525.49	\$ 245,261.14
b1	23/01/2014	\$ 7,749.77	\$ 619.98	\$ -	\$ -	\$ 8,369.76	\$ 253,630.89
5	28/01/2014	\$ 115,718.63	\$ 9,257.49	\$ 42,744.53	\$ 17,357.79	\$ 185,078.44	\$ 438,709.34
6	6/02/2014	\$ 8,443.90	\$ 675.51	\$ 10,157.61	\$ 1,266.59	\$ 20,543.60	\$ 459,252.94
b2	6/02/2014	\$ 15,926.92	\$ 1,274.15	\$ -	\$ -	\$ 17,201.08	\$ 476,454.01
7	13/02/2014	\$ 100,443.16	\$ 8,035.45	\$ 23,220.95	\$ 15,066.48	\$ 146,766.04	\$ 623,220.05
8	26/02/2014	\$ 5,523.59	\$ 441.89	\$ 441.89	\$ 828.54	\$ 7,235.90	\$ 630,455.95
b3	26/02/2014	\$ 2,456.49	\$ 196.52	\$ -	\$ -	\$ 2,653.01	\$ 633,108.96
b4	1/03/2014	\$ 23,656.48	\$ 1,892.52	\$ -	\$ -	\$ 25,549.00	\$ 658,657.96
9	6/03/2014	\$ 12,980.81	\$ 1,038.46	\$ 1,038.46	\$ 1,947.12	\$ 17,004.86	\$ 675,662.82
10	13/03/2014	\$ 107,612.33	\$ 8,608.99	\$ 36,447.24	\$ 16,141.85	\$ 168,810.40	\$ 844,473.22
b5	13/03/2014	\$ 2,272.34	\$ 181.79	\$ -	\$ -	\$ 2,454.13	\$ 846,927.35
11	19/03/2014	\$ 21,207.13	\$ 1,696.57	\$ 1,696.57	\$ 3,181.07	\$ 27,781.34	\$ 874,708.69
b6	19/03/2014	\$ 1,180.85	\$ 94.47	\$ -	\$ -	\$ 1,275.32	\$ 875,984.01
12	6/04/2014	\$ 120,729.47	\$ 9,658.36	\$ 46,858.48	\$ 18,109.42	\$ 195,355.73	\$ 1,071,339.74
13	12/04/2014	\$ 16,504.37	\$ 1,320.35	\$ 1,320.35	\$ 2,475.66	\$ 21,620.73	\$ 1,092,960.47
b7	12/04/2014	\$ 75,256.98	\$ 6,020.56	\$ -	\$ -	\$ 81,277.54	\$ 1,174,238.01
14	20/04/2014	\$ 126,885.99	\$ 10,150.88	\$ 44,100.61	\$ 19,032.90	\$ 200,170.38	\$ 1,374,408.39
b8	20/04/2014	\$ 23,662.41	\$ 1,892.99	\$ -	\$ -	\$ 25,555.40	\$ 1,399,963.79



There is a strong, positive relationship between time and cumulative amount of value (Appendix A). Imports from Samoa by the Tokelau stores can be described well in the following linear relationships:

Jan-Jun: $y = 11,875x - 5 \cdot 10^8$ $R^2 = 0.9928$ Jan-Dec: $y = 13,600x - 6 \cdot 10^8$ $R^2 = 0.9835$

Jul-Dec: $y = 16980x - 7 \cdot 10^8$ $R^2 = 0.9741$

The second-order trend line for the entire year has visually a better fit and no ("illogical") negative intercept, although all regressions show a very good R^2 .

Jan-Dec 2014: $y = 15.373x^2 - 1 \cdot 10^6x + 3 \cdot 10^{10}$ $R^2 = 0.994$

It will be interesting to explore the predictive value of these equations in 2015 and 2016.

Appendix B1: Source data for the analysis: co-op and bulk store invoices. *For each product, packaging and size of the order, the columns specify the unit cost in Samoan tala (WST), total cost price conversion into New Zealand Dollar (NZD), and the stores' invoice price which includes Freight, Government Duty, and Mark-up as applicable.*

Store Cost Sheet			20/4/2014			20/4/2014		
Atafu Coop Store			Exchange Rate			\$ 1.93		
MV Lady Naomi								
DESCRIPTION	UNIT		COST WST	COST NZD	SELL	Freight	Duty	Mark-up
TOBACCO PRODUCTS								
Pall Mall Filtered 50 x 10 x 20's	Ctn	4	\$ 1,636.52	\$ 3,391.75	\$ 10,785.77	\$ 271.34	\$ 6,613.92	\$ 508.76
Pall Mall Menthol 50 x 10 x 20's	Ctn	3	\$ 1,636.52	\$ 2,543.81	\$ 8,089.33	\$ 203.51	\$ 4,960.44	\$ 381.57
DRINKING WATER:								
Bottled Water, 12/1litre	Ctn	100	\$ 15.00	\$ 777.20	\$ 1,018.13	\$ 62.18	\$ 62.18	\$ 116.58
FOOD PRODUCTS								
Eggs, x 15 Dozens, Medium size	Ctn	10	\$ 58.27	\$ 301.92	\$ 395.51	\$ 24.15	\$ 24.15	\$ 45.29
Flour, Baker's 25kg	Bag	10	\$ 41.73	\$ 216.22	\$ 283.25	\$ 17.30	\$ 17.30	\$ 32.43
Rice, Island Sun, 40lb	Bag	20	\$ 42.61	\$ 441.55	\$ 578.44	\$ 35.32	\$ 35.32	\$ 66.23
Salt, Iodised, fine, 40 x 500gm	Bag	3	\$ 14.60	\$ 22.69	\$ 29.73	\$ 1.82	\$ 1.82	\$ 3.40
Sugar, brown, 25kg	Bag	10	\$ 42.60	\$ 220.73	\$ 289.15	\$ 17.66	\$ 17.66	\$ 33.11
FRESH FRUIT AND VEGETABLES								
Onions, 20kg	Bag	8	\$ 32.50	\$ 134.72	\$ 176.48	\$ 10.78	\$ 10.78	\$ 20.21
Potatoes, 20 kg	Bag	20	\$ 40.00	\$ 414.51	\$ 543.01	\$ 33.16	\$ 33.16	\$ 62.18
CANNED GOODS								
Anchor Milk Powder, 12 x 900gm	Ctn	10	\$ 249.70	\$ 1,293.78	\$ 1,694.86	\$ 103.50	\$ 103.50	\$ 194.07
S-26 M/Pwdr, (from birth step 2)	Ctn	4	\$ 206.61	\$ 428.21	\$ 560.95	\$ 34.26	\$ 34.26	\$ 64.23
Condensed Milk, 24 x 395gm	Ctn	5	\$ 143.17	\$ 370.91	\$ 485.89	\$ 29.67	\$ 29.67	\$ 55.64
Corned Beef, Pacific 24 x 16oz	Ctn	8	\$ 271.00	\$ 1,123.32	\$ 1,471.54	\$ 89.87	\$ 89.87	\$ 168.50
Mushrooms in tins Watt. 24/400g	Ctn	3	\$ 82.00	\$ 127.46	\$ 166.97	\$ 10.20	\$ 10.20	\$ 19.12
Instant Coffee 24x100gm	Ctn	8	\$ 182.35	\$ 755.85	\$ 990.17	\$ 60.47	\$ 60.47	\$ 113.38
Irish Stew, 24 x 450gm	Ctn	5	\$ 112.00	\$ 290.16	\$ 380.10	\$ 23.21	\$ 23.21	\$ 43.52
Jams, Raspberry 12 x 550gm G/C	Ctn	4	\$ 60.09	\$ 124.54	\$ 163.15	\$ 9.96	\$ 9.96	\$ 18.68
Mackerel n/coil 24 x15oz, C/Choice	Ctn	15	\$ 71.30	\$ 554.15	\$ 725.93	\$ 44.33	\$ 44.33	\$ 83.12
Spaghetti, 24 x 425gm, Watties	Ctn	10	\$ 50.78	\$ 263.11	\$ 344.67	\$ 21.05	\$ 21.05	\$ 39.47
Coconut Cream, 24 x 425gm	Ctn	10	\$ 60.00	\$ 310.88	\$ 407.25	\$ 24.87	\$ 24.87	\$ 46.63
Tuna in Oil 24 x 185gm, l'apana.	Ctn	15	\$ 82.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60
GROCERIES								
Bongo 48 x 20gm,	Ctn	15	\$ 23.00	\$ 178.76	\$ 234.17	\$ 14.30	\$ 14.30	\$ 26.81
Chewing Gum 30 x 50's, PK	Ctn	3	\$ 410.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60
Chewing Gum 30 x 50's, Juicy	Ctn	3	\$ 410.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60
Garlic, 10kg	Ctn	1	\$ 47.83	\$ 24.78	\$ 32.47	\$ 1.98	\$ 1.98	\$ 3.72
Cooking Oil, 6 x 2 litre, unsaturated	Ctn	30	\$ 40.00	\$ 621.76	\$ 814.51	\$ 49.74	\$ 49.74	\$ 93.26
Corn Flakes 24 x 300gm	Ctn	3	\$ 122.84	\$ 190.94	\$ 250.14	\$ 15.28	\$ 15.28	\$ 28.64

A separate table in the source workbooks totals these variables for each atoll store, providing a checksum for data entry of the unit records.

MV Lady Naomi			20/4/2014			20/4/2014		
Coop Stores			Exchange Rate			\$ 1.93		
DESCRIPTION	UNIT	QTY	COST WST	COST NZD	Freight	Duty	Mark-up	SELL
Charge Codes:	ZC1000 2020		Atafu	\$ 41,837.18	\$ 3,346.97	\$ 14,446.48	\$ 6,275.58	\$ 65,906.21
	ZC3000 2020		Nukunonu	\$ 46,452.31	\$ 3,716.18	\$ 16,867.72	\$ 6,967.85	\$ 74,004.06
	ZC2000 2020		Fakaofu	\$ 38,596.50	\$ 3,087.72	\$ 12,786.40	\$ 5,789.48	\$ 60,260.10
				\$ 126,885.99	\$ 10,150.88	\$ 44,100.61	\$ 19,032.90	\$ 200,170.38

Appendix B2: Example of unit record listing of stores invoices, columns A-J and K-W (note corresponding row numbers). Source data are those from the worksheet shown on previous page.

	A	B	C	D	E	F	G	H	I	J
1	Sort	Tender	Shipment	Destination	Volume or weight	Measure-ment	Total bought	Product	UNIT	QTY
1066	1079	2014/14	20/04/2014	Atafu	10,000.0	unit	40000	Pall Mall Filtered 50 x 10 x 20's	Ctn	4
1067	1080	2014/14	20/04/2014	Atafu	10,000.0	unit	30000	Pall Mall Menthol 50 x 10 x 20's	Ctn	3
1068	1081	2014/14	20/04/2014	Atafu	12.0	litre	1200	Bottled Water, 12/1litre	Ctn	100
1069	1082	2014/14	20/04/2014	Atafu	180.0	unit	1800	Eggs, x 15 Dozens, Medium size	Ctn	10
1070	1083	2014/14	20/04/2014	Atafu	25.0	kg	250	Flour, Baker's 25kg	Bag	10
1071	1084	2014/14	20/04/2014	Atafu	18.2	kg	363	Rice, Island Sun, 40lb	Bag	20
1072	1085	2014/14	20/04/2014	Atafu	20.0	kg	60	Salt, Iodised, fine, 40 x 500gm	Bag	3
1073	1086	2014/14	20/04/2014	Atafu	25.0	kg	250	Sugar, brown, 25kg	Bag	10
1074	1087	2014/14	20/04/2014	Atafu	20.0	kg	160	Onions, 20kg	Bag	8
1075	1088	2014/14	20/04/2014	Atafu	20.0	kg	400	Potatoes, 20 kg	Bag	20
1076	1089	2014/14	20/04/2014	Atafu	10.8	kg	108	Anchor Milk Powder, 12 x 900gm	Ctn	10
1077	1090	2014/14	20/04/2014	Atafu	1.0	unit	4	S-26 M/Pwdr, (from birth step 2)	Ctn	4
1078	1091	2014/14	20/04/2014	Atafu	9.5	kg	47	Condensed Milk, 24 x 395gm	Ctn	5
1079	1092	2014/14	20/04/2014	Atafu	11.4	kg	91	Corned Beef, Pacific 24 x 16oz	Ctn	8
1080	1093	2014/14	20/04/2014	Atafu	9.6	kg	29	Mushrooms in tins Watt. 24/400g	Ctn	3
1081	1094	2014/14	20/04/2014	Atafu	2.4	kg	19	Instant Coffee,24x100gm	Ctn	8
1082	1095	2014/14	20/04/2014	Atafu	10.8	kg	54	Irish Stew, 24 x 450gm	Ctn	5
1083	1096	2014/14	20/04/2014	Atafu	6.6	kg	26	Jams,Raspberry12 x 550gm G/C	Ctn	4
1084	1097	2014/14	20/04/2014	Atafu	10.7	kg	160	Mackerel n/oil 24 x15oz,C/Choice	Ctn	15
1085	1098	2014/14	20/04/2014	Atafu	10.2	kg	102	Spaghetti, 24 x 425gm, Watties	Ctn	10
1086	1099	2014/14	20/04/2014	Atafu	10.2	kg	102	Coconut Cream, 24 x 425gm	Ctn	10
1087	1100	2014/14	20/04/2014	Atafu	4.4	kg	67	Tuna in Oil 24 x 185gm, l'apana.	Ctn	15
1088	1101	2014/14	20/04/2014	Atafu	1.0	kg	14	Bongo 48 x 20gm,	Ctn	15
1089	1102	2014/14	20/04/2014	Atafu	1,500.0	unit	4500	Chewing Gum 30 x 50's, PK	Ctn	3
1090	1103	2014/14	20/04/2014	Atafu	1,500.0	unit	4500	Chewing Gum 30 x 50's, Juicy	Ctn	3
1091	1104	2014/14	20/04/2014	Atafu	10.0	kg	10	Garlic, 10kg	Ctn	1
1092	1105	2014/14	20/04/2014	Atafu	12.0	litre	360	Cooking Oil, 6 x 2 litre, unsaturated	Ctn	30
1093	1106	2014/14	20/04/2014	Atafu	7.2	kg	22	Corn Flakes 24 x 300gm	Ctn	3

	K	L	M	N	O	P	Q	R	S	T	U	V	W
1	COST WST	COST NZD	SELL	Freight	Duty	Mark-up	Unit cost NZD	Div	Grp	Cls	Sub	Com	Tokelau COICOP
1066	\$ 1,636.52	\$ 3,391.75	\$ 10,785.77	\$ 271.34	\$ 6,613.92	\$ 508.76	\$ 0.27	02	2	1	082	01	02.2.1_082.01
1067	\$ 1,636.52	\$ 2,543.81	\$ 8,089.33	\$ 203.51	\$ 4,960.44	\$ 381.57	\$ 0.27	02	2	1	082	02	02.2.1_082.02
1068	\$ 15.00	\$ 777.20	\$ 1,018.13	\$ 62.18	\$ 62.18	\$ 116.58	\$ 0.85	01	2	2	071	01	01.2.2_071.01
1069	\$ 58.27	\$ 301.92	\$ 395.51	\$ 24.15	\$ 24.15	\$ 45.29	\$ 0.22	01	1	4	035	01	01.1.4_035.01
1070	\$ 41.73	\$ 216.22	\$ 283.25	\$ 17.30	\$ 17.30	\$ 32.43	\$ 1.13	01	1	1	002	02	01.1.1_002.02
1071	\$ 42.61	\$ 441.55	\$ 578.44	\$ 35.32	\$ 35.32	\$ 66.23	\$ 1.59	01	1	1	001	01	01.1.1_001.01
1072	\$ 14.60	\$ 22.69	\$ 29.73	\$ 1.82	\$ 1.82	\$ 3.40	\$ 0.50	01	1	9	060	01	01.1.9_060.01
1073	\$ 42.60	\$ 220.73	\$ 289.15	\$ 17.66	\$ 17.66	\$ 33.11	\$ 1.16	01	1	8	049	02	01.1.8_049.02
1074	\$ 32.50	\$ 134.72	\$ 176.48	\$ 10.78	\$ 10.78	\$ 20.21	\$ 1.10	01	1	7	045	21	01.1.7_045.21
1075	\$ 40.00	\$ 414.51	\$ 543.01	\$ 33.16	\$ 33.16	\$ 62.18	\$ 1.36	01	1	7	046	01	01.1.7_046.01
1076	\$ 249.70	\$ 1,293.78	\$ 1,694.86	\$ 103.50	\$ 103.50	\$ 194.07	\$ 15.69	01	1	3	030	03	01.1.3_030.03
1077	\$ 206.61	\$ 428.21	\$ 560.95	\$ 34.26	\$ 34.26	\$ 64.23	\$ 140.24	01	1	4	030	02	01.1.4_030.02
1078	\$ 143.17	\$ 370.91	\$ 485.89	\$ 29.67	\$ 29.67	\$ 55.64	\$ 10.25	01	1	4	028	01	01.1.4_028.01
1079	\$ 271.00	\$ 1,123.32	\$ 1,471.54	\$ 89.87	\$ 89.87	\$ 168.50	\$ 16.18	01	1	2	020	02	01.1.2_020.02
1080	\$ 82.00	\$ 127.46	\$ 166.97	\$ 10.20	\$ 10.20	\$ 19.12	\$ 5.80	01	1	7	047	02	01.1.7_047.02
1081	\$ 182.35	\$ 755.85	\$ 990.17	\$ 60.47	\$ 60.47	\$ 113.38	\$ 51.57	01	2	1	067	04	01.2.1_067.04
1082	\$ 112.00	\$ 290.16	\$ 380.10	\$ 23.21	\$ 23.21	\$ 43.52	\$ 7.04	01	1	2	020	03	01.1.2_020.03
1083	\$ 60.09	\$ 124.54	\$ 163.15	\$ 9.96	\$ 9.96	\$ 18.68	\$ 6.18	01	1	8	050	01	01.1.8_050.01
1084	\$ 71.30	\$ 554.15	\$ 725.93	\$ 44.33	\$ 44.33	\$ 83.12	\$ 4.54	01	1	3	025	02	01.1.3_025.02
1085	\$ 50.78	\$ 263.11	\$ 344.67	\$ 21.05	\$ 21.05	\$ 39.47	\$ 3.38	01	1	1	009	18	01.1.1_009.18
1086	\$ 60.00	\$ 310.88	\$ 407.25	\$ 24.87	\$ 24.87	\$ 46.63	\$ 3.99	01	1	4	032	01	01.1.4_032.01
1087	\$ 82.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60	\$ 12.54	01	1	3	025	08	01.1.3_025.08
1088	\$ 23.00	\$ 178.76	\$ 234.17	\$ 14.30	\$ 14.30	\$ 26.81	\$ 16.26	01	1	9	066	05	01.1.9_066.05
1089	\$ 410.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60	\$ 0.19	01	1	8	056	03	01.1.8_056.03
1090	\$ 410.00	\$ 637.31	\$ 834.87	\$ 50.98	\$ 50.98	\$ 95.60	\$ 0.19	01	1	8	056	02	01.1.8_056.02
1091	\$ 47.83	\$ 24.78	\$ 32.47	\$ 1.98	\$ 1.98	\$ 3.72	\$ 3.25	01	1	7	045	16	01.1.7_045.16
1092	\$ 40.00	\$ 621.76	\$ 814.51	\$ 49.74	\$ 49.74	\$ 93.26	\$ 2.26	01	1	5	040	01	01.1.5_040.01
1093	\$ 122.84	\$ 190.94	\$ 250.14	\$ 15.28	\$ 15.28	\$ 28.64	\$ 11.58	01	1	1	010	04	01.1.1_010.04

Appendix C: Aggregate top food items imported into Tokelau (revised 15 September 2015).

Part 1, Below: Main food and household items purchased 2014 in kg (items over 1 metric tonne), litres (items over 1 m³), or numbers (over 1,000), in alphabetic order (sorted by volume in part 2).

Part 2, Following page: Food items per head of total population (quantity divided by total population, and by working age population; plus average consumption per head per week (= then divided by 52).

Food item (alphabetic)	Purchased 2014	
Apples	3,033	kg
Bacon shoulder	937	kg
Bongo [snack]	7,402	kg
Bottled water	32,002	litres
Brown sugar	49,350	kg
Butter	2,989	kg
Chicken leg quarters	54,085	kg
Chicken wings	8,596	kg
Coconut cream	1,989	kg
Condensed milk	1,224	kg
Cooking oil	20,952	litres
Corned beef	7,047	kg
Crisps, potato & corn chips	721	kg
Flour, Baker's & Normal	25,575	kg
Fruit salad	1,761	kg
Instant noodles	8,707	kg
Just juice	15,276	kg
Lamb chops	5,648	kg
Lamb necks	4,086	kg
Long-life milk	8,633	litres
Mackerel in oil	8,109	kg
Mayonnaise	1,858	kg
Milk powder	4,666	kg
Milo powder	3,370	kg
Mutton flaps	3,680	kg
Onions	7,980	kg
Oranges	3,360	kg
Pineapple crush or slices	1,038	kg
Potato chips, Frozen	1,875	kg
Potatoes	17,340	kg
Rice	62,357	kg
Salt beef	6,047	kg
Salt, iodised	2,602	kg
Sausages: Beef	3,258	kg
Sausages: Chicken franks	5,240	kg
Sausages: Pork	3,367	kg
Sausages: Saveloy	1,080	kg
Sausages: Vienna	469	kg
Spaghetti tins	5,001	kg
Sweet biscuits	8,049	kg
Tang fruit drink powder	2,238	kg
Tomato sauce	3,361	kg
Tuna in oil	5,007	kg
Zap chocolate drink	12,900	litres

Cleaning products	Purchased 2014	Unit
Axion paste	2,621	kg
Chlorox/Janola	2,171	litre
Fabric softener	2,215	litre
Fly spray	2,346	kg
Napisan	1,524	kg
Protex Soap	2,149	kg
Washing powder	2,702	kg

Miscellaneous (alphabetic)	Purchased 2014	Unit
Babies' nappies	122,824	items
Baby wipes	15,920	units (80/pack)
Batteries all sorts	10,050	units
Beach jandals	4,368	pairs
Bubble/chewing gum	143,400	items
Christmas lights	9,648	items
Depends for adults	5,120	items
Eggs	136,620	items
Foam/plastic cups	62,560	items
Foam/plastic plates	33,720	items
Gas lighters	4,900	items
Hair conditioner	3,696	bottles
Hair shampoo	2,472	bottles
Ladies' pads	17,316	items
Milk biscuits	4,400	(20 packs of 10= kg?)
Panadol	36,000	tablets
Paper napkins	20,000	items
Pareu material	88,536	metres
Plastic spoons	35,152	items
Poplin	52,011	metres
Razor blade refill	2,700	items
Tea bags	108,480	bags
Toilet paper	56,120	rolls

Bulk items (by rank)	Purchased 2014	Unit
Cement	494,400	kg
Petrol	258,400	litres
Diesel	37,000	litres
Kerosene	24,600	litres
Gas refill	19,318	kg
Outboard oil	9,344	litres
Paint, ext & undercoat	2,664	litres

Top 40 solid food items and oil (mostly over 1 metric tonne), ranked by decreasing weight or volume.

Food item (by rank)	Purchased in	Consumption 2014	per head (15-64y)	Average weekly consumption		
	2014	per head (all=1,383)	working age (=852)	from	to	Unit
1 Rice	62,357	45.09	73.19	0.87	- 1.41	kg
2 Chicken leg quarters	54,085	39.11	63.48	0.75	- 1.22	kg
3 Brown sugar	49,350	35.68	57.92	0.69	- 1.11	kg
4 Flour, Baker's & Normal	25,575	18.49	30.02	0.36	- 0.58	kg
5 Cooking oil	20,952	15.15	24.59	0.29	- 0.47	litres
6 Potatoes	17,340	12.54	20.35	0.24	- 0.39	kg
7 Instant noodles	8,707	6.30	10.22	0.12	- 0.20	kg
8 Chicken wings	8,596	6.22	10.09	0.12	- 0.19	kg
9 Mackerel in oil	8,109	5.86	9.52	0.11	- 0.18	kg
10 Sweet biscuits	8,049	5.82	9.45	0.11	- 0.18	kg
11 Onions	7,980	5.77	9.37	0.11	- 0.18	kg
12 Bongo [snack]	7,402	5.35	8.69	0.10	- 0.17	kg
13 Corned beef	7,047	5.10	8.27	0.10	- 0.16	kg
14 Salt beef	6,047	4.37	7.10	0.08	- 0.14	kg
15 Lamb chops	5,648	4.08	6.63	0.08	- 0.13	kg
16 Sausages: Chicken Franks	5,240	3.79	6.15	0.07	- 0.12	kg
17 Tuna in oil	5,007	3.62	5.88	0.07	- 0.11	kg
18 Spaghetti tins	5,001	3.62	5.87	0.07	- 0.11	kg
19 Milk powder***	4,666	3.37	5.48	0.06	- 0.11	kg
20 Lamb necks	4,086	2.95	4.80	0.06	- 0.09	kg
21 Mutton flaps	3,680	2.66	4.32	0.05	- 0.08	kg
22 Milo (powder)****	3,370	2.44	3.96	0.05	- 0.08	kg
23 Sausages: Pork	3,367	2.43	3.95	0.05	- 0.08	kg
24 Tomato sauce	3,361	2.43	3.94	0.05	- 0.08	kg
25 Oranges	3,360	2.43	3.94	0.05	- 0.08	kg
26 Sausages: Beef	3,258	2.36	3.82	0.05	- 0.07	kg
27 Apples	3,033	2.19	3.56	0.04	- 0.07	kg
28 Butter	2,989	2.16	3.51	0.04	- 0.07	kg
29 Salt, iodised	2,602	1.88	3.05	0.04	- 0.06	kg
30 Tang fruit drink powder**	2,238	1.62	2.63	0.03	- 0.05	kg
31 Coconut cream	1,989	1.44	2.33	0.03	- 0.04	kg
32 Potato chips, Frozen	1,875	1.36	2.20	0.03	- 0.04	kg
33 Mayonnaise	1,858	1.34	2.18	0.03	- 0.04	kg
34 Fruit salad	1,761	1.27	2.07	0.02	- 0.04	kg
35 Condensed & evaporated milk	1,224	0.89	1.44	0.02	- 0.03	kg
36 Sausages: Saveloy	1,080	0.78	1.27	0.02	- 0.02	kg
37 Pineapple crush or slices	1,038	0.75	1.22	0.01	- 0.02	kg
38 Bacon shoulder	937	0.68	1.10	0.01	- 0.02	kg
39 Crisps, Potato chips, Corn chips	721	0.52	0.85	0.01	- 0.02	kg
40 Sausages: Vienna	469	0.34	0.55	0.01	- 0.01	kg
All sausages combined	13,414	9.70	15.74	0.19	- 0.30	kg

Top 8 non-alcoholic drink items, ranked by volume consumed (with solubles reconstituted).

Non-alcoholic drink item (by rank)	Purchased in	Consumption 2014	per head (15-64y)	Average weekly consumption		
	2014 (kg or litres)	per head (all=1,383)	working age (=852)	from	to	litres*
1 Tang fruit drink (reconst., 30g/l)	74,600	53.94	87.56	1.04	- 1.68	**
2 Milk	49,160	35.55	57.70	0.68	- 1.11	
3 Milk from powder (reconst. 100g/l)	46,660	33.74	54.77	0.65	- 1.05	***
4 Milo (reconst. in water, 125g/l)	26,960	19.49	31.64	0.37	- 0.61	****
5 Bottled water	32,002	23.14	37.56	0.44	- 0.72	
6 Tea (1 bag per 240 ml cup)	26,035	18.83	30.56	0.36	- 0.59	*****
7 Just juice	15,276	11.05	17.93	0.21	- 0.34	
8 Zap chocolate drink	12,900	9.33	15.14	0.18	- 0.29	