Evidence-based policy-making in the Pacific: developing targeted food and nutrition policies using Household Income and Expenditure Survey data

Tim Martyn

Policy Officer

Food and Agriculture Organisation

What are statistics for?

- We know what statistics are
- Why do we collect them?
- **Informing effective, evidence-based policy**

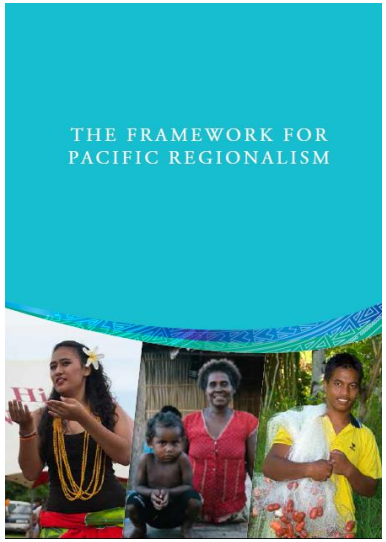
Household Income and Expenditure Surveys

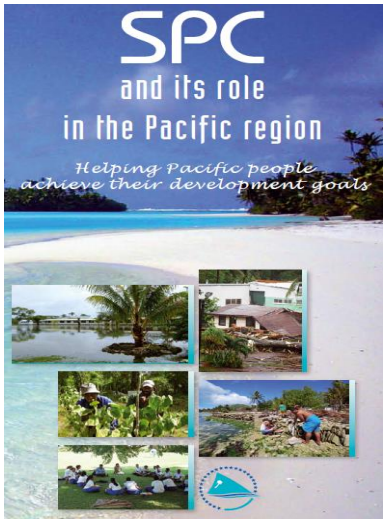
- Households answer **demographic questions**, and complete **detailed income and expenditure diaries** (usually for a two-week period)
- Traditionally used to examine household **income and expenditure patterns across different segments of population** (location, employment type, household member education, etc) and estimate food and income poverty
- Internationally, used to investigate **diet and nutritional status of households**, given advantages over existing surveys (wealth of complimentary data; large sample size; two-weeks of entries rather than 24-hour recall

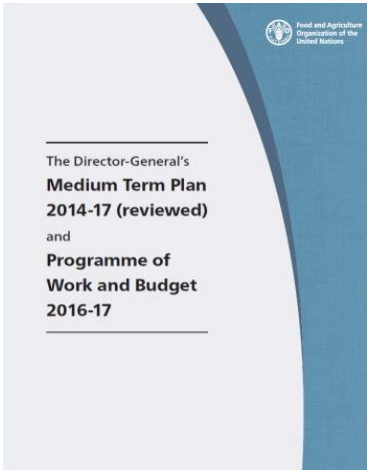
Poor diet, nutrition and NCDS have increasingly come into focus among PICs

Country	Diabetes rate (%)	Obesity rates (%)
Cook Islands	23.6	61.4
FSM	32.1	42.6
Fiji	12.9	18.0
Kiribati	20.4	39.9
Nauru	16.2	58.1
Niue	38.4	61.0
Palau	-	-
PNG	13.3	16.2
RMI	37.2	31.6
Samoa	22.0	54.7
Solomon Islands	17.7	23.7
Tonga	17.5	57.6
Tuvalu	-	58.7
Vanuatu	21.2	18.8
AVERAGE	**22.7**	**40.3**

Improving PIC resilience to food and nutritional insecurity, and reduction of NCDs, is a priority







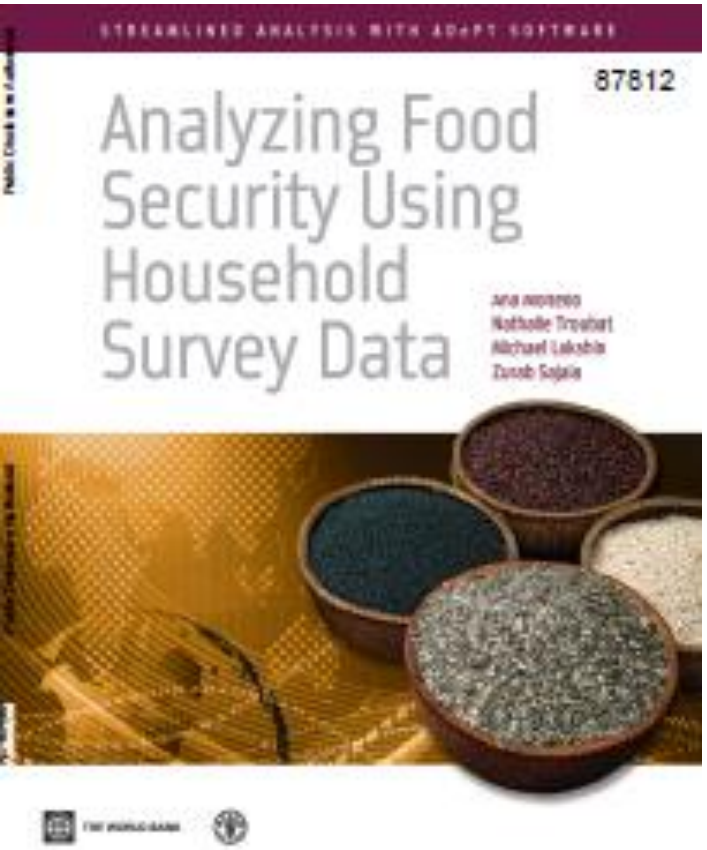
Policy lens moving from 'basic needs' to adequate diet

- Minimum calories not the issue for many PICs (nutrition transition improved access to calories, impoverished diet) therefore need to move beyond kcal only food poverty lines to identifying populations not accessing an *adequate diet*
- Ask what is the cost (and who lacks access) to a diet sufficient to live in state of good health (taking into account age and sex, level of physical activity) including

- minimum and maximum daily intake for kcal, with the correct proportion from protein, fat and sugar;
- getting intake above minimum for range of micronutrients, like iron, vitamin a;
- not too much certain micronutrients, like sodium;

- **Use HIES to identify populations suffering poor diet and target policy interventions to improve nutrition/reduce NCDs**

Methodology for converting HIES food expenditure to nutrition info



We adapted WB/FAO methodology to Pacific context:

- Included fat, sodium and protein in addition to calories (kcal), vitamin A and iron
- Establish ADER/RDI/UL for (by age and sex) based on average height and weight (BMI) and physical activity (PAL) (not 5% percentile)
- Convert food expenditure into nutrition information using Pacific Food Composition Tables (FAO/USP/SPC)
- Also provided more detailed investigation of sub-populations (location, household demographics, etc) combined factors important to livelihoods in Pacific context (subsistence income, gift expenditure, etc)

Doing this accurately is a lot of work (1)!

After establishing thresholds:

1. Match COICOP codes in HIES diaries with food composition table entries to define nutrients/calories per 100g estimate

2. Determine AME for each nutrient

The Pacific Islands food composition tables

SECOND EDITION

The University of the South Pacific

Key	Food name		Measure	Water	Energy	Energy	Protein	Total fat	CHO available	TDF	Na	Mg	K	Ca	Fe
			g	g	kcal	kJ	g	g	g	g	mg	mg	mg	mg	mg
A	STARCHY STAPLES														
A102	Taro, giant swamp, baked		100	73	86	360	0.6	0.2	19.4	3.0	78	23	73	198	0.7
		1 serve	155	114	133	558	0.9	0.3	30.1	4.7	121	36	113	307	1.0
A103	Taro, giant swamp, boiled		100	78	72	302	0.5	0.2	16.2	2.5	65	19	61	165	0.6
		1 serve	260	202	187	784	1.2	0.4	42.2	6.6	169	49	159	429	1.4
A066	Taro, giant swamp, raw		100	75	79	331	0.5	0.2	17.8	2.8	72	21	67	182	0.6
A055	Taro, red, common, boiled		100	72	105	437	0.9	0.4	24.2	1.0	1	114	264	37	1.1
		1 serve	260	187	272	1 137	2.3	1.0	62.9	2.6	3	296	686	96	2.9
A096	Winged bean, root, baked, earth-oven		100	66	139	584	6.4	0.1	25.4	6.5	28	19	466	24	1.6
A071	Yam, tuber, baked		100	50	196	819	3.7	0.4	44.8	0.3	6	18	590	22	1.5

Doing this accurately is a lot of work(2)!

3. Standardization of the quantities into grams

code	type	sub-category	food item code	weight kg	conversion factor 100g
3	bundle	cooking banana	11103	6	60
3	bundle	ripe banana	11132	2	20
4	bag	Fiji taro/Island taro/water taro	11211	15	150
4	bag	yam	11208	15	150
4	bag	kumala	11209	15	150
4	bag	potatoes	11210	20	200
4	bag	manioc	11203	20	200
4	bag	cooking banana	11103	15	150
4	bag	seafood	12116, 12303, 12350	5	50
4	bag	rice	13207	2	20
4	bag	flour	13209	20	200
4	bag	nuts	16026, 11104, 11107, 11108	2	20
4	bag	fruit	11103, 11110, 11212, 11132, 11247	5	50
5	Loaf	bread, coconut bread	13101, 13103	0.5	5
6	fruit	nuts	16026, 111104, 11107, 11108	0.1	1
6	fruit	onion, corn, carrot, tomato	11111, 11204, 11214, 11216, 11232, 11245	0.15	1.5
6	Fruit	organge, apple, mango lime	11101, 11109, 11111, 11110	0.25	2.5

4. Adjustment for nonedible portions

Food Item	EP%
kumala	83
manioc	75
yam	86
taro	82
chinese cabbage	79
island cabbage	69
carrots	92
pumpkin	68
ripe bananna	71
cooking banana	66
breadfruit	55
mangoes	62
watermelon	53
papaya	66
pineapple	64
coconut cream	15
peanuts	75
corn	38

Enables detailed dietary insight into sub-populations (location, income, education..

VARIABLES	Overall	Rural	Urban
VANUATU: RURAL V URBAN	n=3957	n=3037	n=920
Average monthly income (Vt)	86,021.28	83,145.72	95,513.73
Av. monthly expenditure food (Vt)	42,652.37	43,429.44	40,087.19
Caloric Intake (AME)	3,154.80	3,224.51	2,924.69
Calories >150% ADER	0.18	0.19	0.16
Calories <50% ADER	0.12	0.1	0.16
Fat >150% UL	0.09	0.09	0.10
Fat <50% RDI	0.18	0.19	0.13
Sodium >150% UL	0.15	0.12	0.23
Sodium <50% RDI	0.21	0.24	0.09
Protein < 50% of RDI	0.05	0.06	0.05
Iron <50% RDI	0.06	0.03	0.14
Vit. A <50% RDI	0.08	0.07	0.13

And which of these factors contribute most to poor dietary outcomes

VARIABLES	(1) Meets all RDI and UL	(2) Calories <50% ADER	(3) Sodium <50% RDI	(4) Sodium >150% UL	(5) Fat <50% RDI	(6) Fat > 150% UL	(7) Protein <50% RDI	(8) Iron <50% RDI	(9) Vit. A <50% RDI
Household head is female	0.05	-0.14+	-0.14*	0.13	-0.16*	0.10	-0.15	0.03	-0.21*
HHH age is <25 or >65	-0.00+	-0.00*	-0.00	0.00	0.00	-0.00	-0.00	-0.01**	-0.00
Household head has obtained post-primary education	-0.01	0.00	-0.03**	0.03*	-0.01	0.02	-0.03	-0.02	-0.01
Ratio of dependents to adults	-0.23**	0.43**	0.44**	-0.55**	0.32**	-0.46**	0.31**	0.42**	0.28**
Modern cooking fuel (gas, electricity, kerosene)	0.00	-0.18*	-0.08	0.31**	-0.17**	0.19*	-0.05	-0.12	-0.11
Household in urban location	0.49**	0.59**	0.01	0.05	0.03	-0.09	0.44**	0.71**	0.46**
Household wage labour income rate	-0.02*	-0.01	-0.04**	0.00	-0.01*	0.01	-0.03**	0.02*	0.01
Observations	3,833	3,833	3,833	3,833	3,833	3,833	3,833	3,833	3,833
chi2	92.74	63.96	149.4	52.36	53.18	18.68	54.74	62.77	84.97

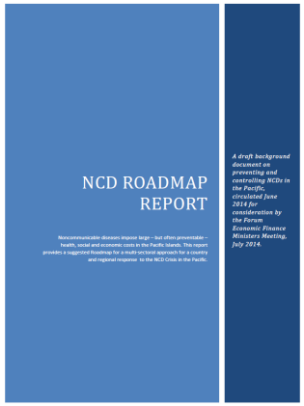
HIES enables policy-makers to identify foods contributing most to obesity and NCDs

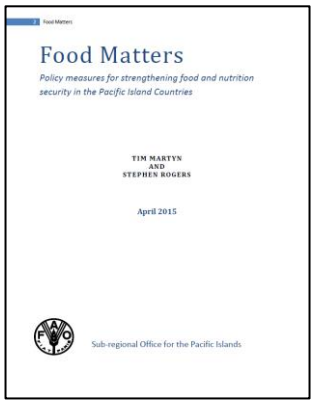
	Contribution to Samoan Diet[a]				Average nutrient density of foods in Samoa[b]			
Commodity Description	Calories (% Share)	Sodium (% Share)	Fat (% Share)	Protein (% Share)	Mean Energy content (Kj/100g)	Mean Fat content (%)	Mean Sugar content (%)	Mean Sodium content (mg/100g)
Confectionary	8	1	1	0	1266	13	56	94
Cakes, sweet biscuits etc	2	2	3	2	1938	19	31	356
Savoury snacks	2	3	4	1	2039	23	8	667
Beverages	2	1	5	3	374	2	17	56
Edible ices	1	0	2	1	754	9	20	50
Breakfast cereals	0	0	0	0	1581	3	46	485
Other milk products	0	0	0	0	666	8	10	57
Cheese	0	0	0	0	1595	32	1	713
Convenience foods	1	9	2	1	897	8	4	1236
Fats & oils	2	1	11	0	3030	81	0	328
Breads	3	7	2	3	956	6	7	551
Pasta, rice, grains	5	1	2	4	1514	10	2	314
Meat, poultry, fish, eggs	12	8	26	52	910	14	-	162
Processed meats (incl canned)	6	18	15	16	1041	18	4	904
Fruit & veg (fresh & frozen)	3	0	1	2	191	1	-	16
Processed fruit & vegetables	0	0	0	0	329	2	9	329
Sauces and spices	0	4	0	0	555	6	21	1685
Table Salt	0	41	0	0	0	0	0	38758
Coconut products	5	0	21	2	1289	29	-	11
Root crops	47	3	3	14	459	1	-	28

Also identify which foods most efficient at assisting households meet nutrition needs

Name	Vt/kg	Consumption (g)	Expenditure (Vt)	Required decrease (Vt/kg)	Allowable Increase (Vt/kg)
Bananas (Cooking)	150	587.97	88.20		5.3
Island Cabbage	132	315.99	41.71		9.9
Cabin Biscuits	353	191.47	67.59		71.5
Peanuts	382	166.33	63.54		18.5
Water Taro	146	0		6.7	
Cassava	133	0		9.5	
Bread fruit	109	0		10.5	
Sweet potato	145	0		32.9	
Other fresh fruits n.e.c	75	0		33.6	
Ripe Bananas	127	0		36.8	
Pumpkin	88	0		43.4	
Taro	146	0		52.2	
Bread	300	0		62.4	
Beef fresh	201	0		64.9	
Sugarcane	128	0		67.6	
TOTAL		1261.76	**261.4 (USD2.73)**		

Inform targeted policy interventions for assisting households most at risk of poor nutrition outcomes





- Pricing policies (excises) and tariff reform (for f and v) to encourage substitution
- Multi-sector programs improving access to nutritious food and bev. for targeted groups (households in hardship via e-vouchers; school fruit programs)
- Investing in improving efficiency of production and marketing systems for select foods most efficient at improving diet among at risk hhs

Key messages

- HIES data provides policy-makers with an insight into food and nutritional security of households, by sub-population, in order to identify at risk groups
- HIES also identifies which foods contribute most to poor nutrition, and improved nutrition
- This enables PICs to design and implement policies which effectively target policy interventions

Road ahead

FAO working in number of PICs using HIES to provide food and nutritional security insights to agriculture and health sector stakeholders:

- Vanuatu (launching report October 2015)
- Samoa (launching November 2015)
- FSM (beginning Nov 2015; aim to launch Jan 2015)
- Solomon Islands (beginning Nov 2015; launching Feb 2016)

Looking forward to more opportunities for collaboration with PICs and technical partners

Thankyou!