

Prince Edward Island Pilot Food Costing Project Report



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A project of the University of Prince Edward Island and the PEI Food Security Network



Acknowledgements:

This pilot food costing project is part of a larger UPEI research study entitled *The Role of Sustainable Livelihood Assets in Food Insecurity and Dietary Intakes of PEI Female Food Bank Clients* which assessed the severity of food insecurity and dietary inadequacies among PEI women food bank clients and examined the determinants of food insecurity.

The project is led by two UPEI researchers (Dr. Jennifer Taylor, Dr. Colleen Walton) and Dr. Fiona Yeudall, a researcher from the Ryerson University Centre for Studies in Food Security in Toronto, Ontario.

This research is overseen by an invaluable research advisory team including representatives from the PEI Food Security Network (Dr. Colleen Walton), Charlottetown Upper Room Food Bank (Mike MacDonald), The PEI Medical Society (Dr. Jenni Zelin) and the PEI Healthy Eating Alliance (Shannon Ochsner, RD). The research assistant on the project, UPEI Foods and Nutrition Honours student Jessica Oickle, was responsible for collecting the food costing data and conducted interviews for the larger study.

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I. Introduction and Background

Food insecurity, defined as “the inadequate or insecure access to adequate food due to financial constraints” (1) is a persistent and pervasive public health problem in Canada (1,2). According to a recent Statistics Canada Canadian Community Health Survey, PEI has a disproportionately high prevalence of food insecurity (10.6%) compared to other Canadian provinces, exceeded only by the Yukon, Northwest Territories and Nunavut (1).

The high food insecurity rates in PEI are a significant concern since there is strong evidence that those who are food insecure are more likely to have inadequate nutrient intakes (3-5), nutrition-related chronic diseases such as heart disease, diabetes and obesity, and poor overall physical and mental health (including high rates of depression and anxiety) compared to those who are food secure (6-10). Further, children who live in food insecure households have been found to have impaired academic performance, including poorer math skills at the kindergarten level (11). Limited income relative to the cost of basic needs has been recognized as the underlying cause of food insecurity (2, 12, 13). A Canadian study has recently identified low income, reliance on social assistance and home ownership as ‘potent indicators’ of household food insecurity (14). That a significantly higher proportion of food insecure Islanders (1) and PEI food bank clients (13) are employed or receiving employment insurance (EI) compared to other provinces and territories suggests that wages or EI benefits are not sufficient to meet basic needs for low income Islanders.

It has been well documented that the cost of purchasing a healthy diet is a significant barrier to healthy eating, with those living in food insecure households being less likely to be able to afford nutritious foods such as fresh fruits and vegetables, milk, whole grains and meat/fish/poultry (2,3). Moreover, researchers have recently documented a ‘strong and significant’ link between food prices and food insecurity (15). Food costing has been therefore identified as an effective tool to monitor one of the key aspects of individual food security, which is food affordability (16, 17). Since 1974, food costing has been carried out by the vast majority of Canadian provinces and territories, using the National Nutritious Food Basket (NNFB) (17). The NNFB includes approximately 66 different foods that represent a weekly healthy diet based on nutrition recommendations and typical Canadian food choices (Appendix A). This tool is used by provinces and territories to determine the cost of foods in different jurisdictions and for different family types, as well as to document changes over time (16, 17). Food costing data has provided insights as to how social assistance programs should be adjusted, and also has provided a means of costing special dietary needs for financial assistance clients (16,17).

We have not been able to assess the extent to which high food costs relative to income is playing a role in the observed high food insecurity rates in PEI since food costing has not been conducted since 2005 when it was under the responsibility of the former PEI Department of Health and Social Services (18,19). Although we do not know the current actual cost of a healthy 'basket' of foods, we expect that food costs in PEI have increased as they have in other provinces (20). However, in order to begin to understand the high food insecurity rates in PEI, and to inform policy and program decisions, it is critical that food costing research be conducted in PEI. We therefore conducted a pilot study examining food costs in three grocery stores in Queens county, and compared these costs to that last collected by the PEI government in 2005.

II. Objectives:

The **objectives** of this project were

- 1) to determine the 2013 cost of the Nutritious Food Basket for PEI for various family types;
- 2) to compare 2013 Nutritious Food Basket costs for PEI to those assessed previously by the Department of Community Services and Seniors (in 2003 and 2005).

III. Methods:

1. Food costing

The PEI Nutritious Food Basket costing methodology and data from previous years was obtained through the PEI Department of Community Service and Seniors (18). In June 2013, a trained food costing research assistant collected the price of the same 66 food items using the methods described in PEI government costing manuals (18, 19). The same three grocery stores (2 in Charlottetown, 1 outside Charlottetown) surveyed in June 2005 agreed to participate in the food costing. The costs of 15 additional food items for special diets (diabetic, vegetarian, celiac heart disease) were also collected.

In cases where the preferred size of a food was not available (e.g., 227 g cheese), the closest lower size food was chosen (e.g., 200 g) and the cost for the preferred size (e.g., 227 g) computed manually. When the preferred size was not available and a larger size was less expensive than the smaller (i.e. it was on sale), the larger size cost was taken and used to compute the cost for the preferred size. Fresh produce sold by the piece (e.g. broccoli) was priced using a standardized method (18). In this method, the price per unit and the average weight of three pieces were used to compute the average cost per kg. When sale prices for

food in the preferred size were available at the time of purchase and were the lowest price, this sale price was used. Foods not available were indicated as “Not Available”.

2. Data handling and analysis

Analysis of the 2013 food costing data used the same consumption factors (weight of foods used to generate the ‘cost per serving’ and recommended number of servings per food group per person based on Canada’s Food Guide) as used in 2003.

Costs were manually computed to the preferred size unit cost. These unit costs were entered into a QuattroPro spreadsheet (developed for and provided by the Department of Social Service and Seniors). An average cost for each food item, the unit cost per food group, and monthly food costs for PEI-NFB for individuals and families were computed using the programmed spreadsheet. Costs for special diet foods were calculated in a similar manner.

The percent change in total food costs for a reference family of four were computed in comparison with the last year that this general PEI food costing data was available (2005) (Department of Community Services and Seniors, unpublished). The percentage change for the reference family of four, from 2001-2005 is taken from the 2005 PEI food costing report (19). Detailed information concerning costs per food group was not available for 2005; we therefore compared the 2013 costs for food groups to unpublished 2003 data.

3. Ethical Approval

Ethical approval to conduct the study was obtained from the UPEI Research Ethics Board prior to starting the research. Access to the stores was granted by the store manager or head office personnel upon written request and telephone follow up. All stores approached agreed to participate in the costing research with the condition of anonymity and that only averaged costing findings would be presented.

IV. Results:

The monthly costs of the PEI nutrition food basket for individuals by age and gender and for pregnant women are included in Appendix 1. These values were used to compute the cost of the nutritious food basket for four family structures (Tables 2 and 3).

The costs of purchasing foods from the PEI Nutritious Food Basket for a reference family of four, averaged for all three participating stores is shown in Table 1. Costs for 2001 through 2005 were taken from the PEI Food Costing Report 2005 (19). Since 2005, the last year of provincial food costing, to 2013, the monthly cost of the nutritious food basket increased from \$581.77 to \$891.68, representing an overall increase in food costs is **37.9%**.

Table 1. Provincial Average Monthly Cost of the PEI Nutritious Food Basket for a Reference Family of Four* from 2001 – 2013

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 Queens County,
Monthly cost (\$)	581.77	587.80	627.88	638.52	646.55	<i>No data</i>	891.68						
% change from previous year		1.04%	6.82%	1.69%	1.26%	?	?	?	?	?	?	?	37.9% since 2005

* Reference family includes two parents, two children aged 2-17 years

Detailed information concerning costs per food group was not available for 2005; we therefore compared 2013 costs to 2003 (Table 2). Results indicate that the cost increase was highest (>50%) for citrus fruit and tomatoes, vegetables other than potatoes, and meat alternatives over the period 2003 to 2013. The lowest percent increase was for sugar and other sweets (white sugar and strawberry jam were included in the NNFB) with the next lowest being potatoes (the combined price of fresh potatoes and frozen French fried potatoes). The average cost increase from 2003 to 2013 for all food-groups combined was **42%**.

Table 2. Costs of Nutritious Food Basket by Food Group for 2003 and 2013¹

Food group weighted price per unit	2003 ²	2013 Queens County	% increase ³
Milk products (per kg)	1.72	2.23	29.65
Eggs (per egg)	0.18	0.27	50.00
Meats, poultry, fish(per kg)	8.28	11.89	43.60
Meat alternatives(per kg)	3.84	5.83	51.82
Grain products(per kg)	3.37	4.82	43.04
Citrus fruit and tomatoes(per kg)	2.09	3.43	64.11
Other fruit(per kg)	2.78	3.61	29.86
Potatoes(per kg)	0.85	1.08	27.06
Other vegetables(per kg)	2.46	3.82	55.28
Fats and oils(per kg)	4.86	7.22	48.56
Sugar and other sweets(per kg)	1.87	2.12	13.43

¹Data from Queen's county grocery stores

²Data provided by the PEI Department of Social Services and Seniors

³Difference between 2013 and 2003 as a percent of base cost in 2003

Comparisons between the cost of the PEI Nutritious Food Basket for other family types and PEI Social Assistance rates for food, clothing, household and personal allowances and total social assistance allowances are shown in Table 3. In general, food basket costs exceeded the total allowance for food, clothing, household and personal items, with the exception of single females. The greatest deficit was for the reference family of four, where there was a deficit of \$147 without allowing any funds for clothing, household or personal items. The PEI NFB comprised 28.7 to 54.3% of the total monthly social assistance allowance.

Table 3. Nutritious Food Basket Costs Relative to PEI Social Assistance Allowances (SA) for 2013.

	2013 PEI Nutritious Food basket cost Queens County	SA Food, clothing, household, personal items allowance¹	2013 Deficit (food alone)	Total 2013 SA allowance²	PEI NFB as a percent of total allowance¹
Single Male ³	\$278	\$214	(\$64)	\$780	31.8%
Single Female	\$203		(\$11)		28.7%
Single parent ⁴ with 2 children under 11	\$536	\$519	(\$17)	\$1330	40.3%
Single parent with 2 children over 11-18	\$663	\$631	(\$32)	\$1440	46.0%
Two parents with 2 children ages 2-17	\$883	\$736	(\$147)	\$1626	54.3%

¹ PEI Social Assistance, spring 2013

² Total SA 2013 allowance - food, clothing, household, personal items + shelter + transportation + laundry

³ average adults aged 19-49

⁴ Female single parent

The cost of special diet foods which are used to calculate the additional costs to social assistance clients following a special diet (e.g. diabetic, celiac) are in Table 4. Analysis indicated an overall increase in the cost of special diet foods of **36.9%** over the 2003 to 2013 period.

Table 4. Cost of Special Diet Foods for Individuals with Medical Conditions

	MONTHLY COST OF SPECIAL DIETS		
	PEI AVERAGE 2003	Queens County AVERAGE 2013	Percent change
M ^a -Vegetarian	\$198.90	\$258.71	30.1
F- Vegetarian	\$146.29	\$188.80	29.1
Diabetic 1200 cal	\$92.88	\$129.87	39.8
Diabetic 1500 cal	\$106.10	\$149.08	40.5
Diabetic 1800 cal	\$122.55	\$173.36	41.5
Diabetic 2000 cal	\$142.21	\$204.38	43.7
Diabetic 2400 cal	\$168.69	\$242.60	43.8
Diabetic 2800 cal	\$179.84	\$253.43	40.9
M - AHA Step II ^b	\$180.88	\$255.98	41.5
F - AHA Step II	\$131.06	\$186.18	42.1
M High Protein High Energy	\$261.51	\$362.03	38.4
High Protein - High Energy	\$197.23	\$272.46	38.1
M - Gluten Free	\$213.54	\$277.66	30.0
F - Gluten Free	\$153.54	\$200.20	30.4
M - High Fiber	\$179.52	\$252.53	40.7
F- High Fiber	\$131.95	\$186.41	41.3
M - High Calcium	\$202.46	\$279.07	37.8
F - High Calcium	\$146.22	\$200.58	37.2
Infant 0-3 months	\$102.66	\$131.35	27.9
Infant 4-11 months	\$189.67	\$234.84	23.8

^a M=male F=females

^bAHA Step II is a low fat diet designed to manage cardiovascular disease. An explanation of special diets are included in **Appendix B**.

V. Discussion:

Changes in cost of PEI Nutritious Food Basket Over Time:

This pilot food costing project has documented significant increases in the cost of purchasing a basic 'Nutritious Food Basket' in Charlottetown, PEI over the past decade. Costs have risen by almost 39% since the last provincial food costing data was collected one decade ago. The greatest increases were observed for citrus fruit and tomatoes, vegetables other than potatoes and meat alternatives, although substantial increases were also observed in all other categories except for sugar and other sweeteners. It is important to note that, over the same period, costs for housing, transportation, and health have also increased. The Consumer Price Index

(CPI) for all items in PEI was 125.5 in 2012 compared with the base value of 100 in 2002. CPI values for all food purchased was among the highest increases at 139.8; for water, fuels, and electricity, the CPI increased to 184.8% of the 2002 price (21)

Comparison of PEI Nutritious Food Basket to Social Assistance Rates

In addition to examining changes in food costs over time, we compared the cost of the 2013 Nutritious Food Basket with social assistance rates. Results indicate that none of the family types would be able to purchase the PEI nutritious food basket, given the current social assistance allowances. In fact, even if the family spent nothing on clothing, household, and personal item expenses, which is unrealistic, they would still be unable to purchase the PEI nutritious food basket. Our analysis indicates that a family of four in PEI supported solely through social assistance that wished to purchase a nutritious basket of food would spend 54% of their social assistance income. This is more than four times higher than the average PEI household (12%) (22) and *six times* higher than the national average, where 9.1% of income is spent on food (23).

Although PEI social assistance allowances are reviewed annually, it is clear that increases have not kept pace with rising food costs. The first change in the social assistance food allowances in a decade was made in June 2009, when the food allowance was increased by 10%. Given that there has been an average annual increase in food cost of over the last decade of 4%, this one time 10% increase is clearly not adequate. This is consistent with a PEI Women's Network report, *Paths to Prosperity*, which indicated that people who are reliant on Social Assistance were unable to meet their basic needs because allowances are not indexed to the Consumer Price Index (23).

Since costs for shelter and heat are fixed, budget deficits must be managed by reducing the amount of money budgeted for food. Low income food insecure households must therefore cope by limiting their consumption of milk, vegetables and fruit and relying on foods that are less expensive and filling, which are often high in refined carbohydrates, fat, sugar and salt are purchased (2-4; 21). A recent Toronto study has reported that as the severity of food insecurity increases, so does the risk of multiple hardships, including delaying rent and bill payments, borrowing money and giving up household services such as telephone (24). These hardships, in turn, have a devastating impact on the psychological and physical well being of food insecure families (24). Finally, a study of participants in the SNAP program (formerly the food stamps program) reported a strong link between food costs and food insecurity: for every \$10 increase in the cost of the Thrifty Food Plan (comparable to our NFB), there was a 2.5% increase in household food insecurity and a 12.4% increase in child food insecurity (15).

PEI Nutritious Food Basket and the Working Poor

These cost-of-living increases present a challenge not only for households which are dependent on social assistance, but for all individuals and families with limited income (e.g., minimum wage workers, seasonal workers). PEI's average income per person is consistently lower (1999-2008) than the rest of Canada (\$29,788 vs. \$36,429) and more Islanders have incomes which fall into the lower income quintiles than high income quintiles compared with the rest of Canada (28). In 2012, the total income of \$15,000 or less was reported by 22.8% of individuals in PEI (28). Households falling into this category with two children would spend over 50% of their income if they were to purchase the PEI nutritious food basket.

Food Insecurity, Diet and Health

Our findings have significant dietary and health implications. First of all, it has been well documented that PEI adults have rates of overweight (37%) and obesity (24%) that are higher than the Canadian average. As well, rates of overweight and obesity among PEI children age 12-17 (15% and 6% respectively) are higher than national levels (26). Further, Islanders are more likely to report multiple chronic conditions compared to the rest of Canada, which include diabetes, heart disease and cancer. It is also noteworthy that the heart disease mortality rate (age standardized) for PEI that is higher compared with the rest of Canada (156/100,000 compared 121.5/100,000) (26). We have reported here that fruits and vegetables had the *highest* average price increase over a decade whereas sugar and other sweets and potatoes and French fries had the *lowest* increases; this suggests that the cost of healthy food choices is likely a contributor to the observed high rates of overweight and obesity and chronic disease in the general PEI population. The higher costs for vegetables and fruit over a decade is particularly concerning, since lower consumption of these healthy choices has been shown to significantly increase the risk of chronic diseases such as heart disease, diabetes and cancer, chronic diseases (27).

However, *food insecure and low income households* are particularly vulnerable to the impact of the increasing cost of healthy food choices such as fruits and vegetables: we found that no family type living on social assistance would be able to purchase the nutritious food basket based on 2013 food costs. When income is limited, households are more likely to turn to lower cost foods, which tend to be calorically dense, processed and higher in fat, sugar and salt (2-5). These dietary patterns will, in turn, contribute to higher chronic disease rates in the food insecure population (7-10).

With the 38% increase in the PEI NFB since the last costing data was collected in 2005, and parallel increases in other household costs such as rent, fuel and electricity during this same period, it is implausible that Islanders living on social assistance or earning low average incomes would be able to purchase and consume a healthy diet. It is critical that food costs be monitored annually and used to increase social assistance rates and minimum wage. Further,

as has been seen in Newfoundland, it is also important to index increases to inflation, in order to see reductions in food insecurity (28).

Improving the capacity of these individuals and families to purchase foods in the PEI NFB can help prevent the dietary inadequacies and chronic physical and mental conditions associated with food insecurity. It is clear that addressing the social determinants of health through poverty reduction is essential to mitigate the long-term health-care costs of managing the increasing burden of chronic disease associated with food insecurity.

Moving Forward

It is commendable that there has been recent efforts by the PEI government to address poverty and food insecurity (29), with a provincial Social Action Plan being released in May, 2012. A 2013 update (30) indicates that government plans to 'explore options for regular food rate increases' and plans a 5% increase in food allowances for single person households in January 2014. Given that all family types would experience a significant budget deficit given the current rates, and the highest monthly deficit is for a family of four, it is clear that more comprehensive changes are needed. Specifically, the list of indicators of '*progress on social well being*' in the 2013 progress report does not include food insecurity rates, which must be monitored if we are to measure and achieve success.

This complex and persistent social issue requires an integrated inter-departmental and inter-sectoral approach: a resolution cannot rest with the Department of Community Services and Seniors. Rather, an integrated approach involving other government departments (e.g. housing, education, justice, aboriginal affairs) (31) and community groups (such as the PEI Food Security Network, PEI Group for a Liveable Income, PEI Women's Network and McKillop Centre for Social Justice) is needed. Only then will we be able to transform Prince Edward Island from a province which has the second highest number of children living in food insecure households in Canada (next to Nunavut) (1) to one that has the lowest rate.

VI. Limitations:

To compute the cost of each group of foods, the same food weighting factors were used as in 2003. In this way, the current results does not reflect any possible changes to food consumption patterns over the past decade. As well, the make-up of the food basket for each individual was based on the Health Canada's 2001 version of Canada's Food Guide to Healthy Eating. In 2008, a revised edition of Canada's Food Guide (Eating Well with Canada's Food Guide) was published (31). In this revision, the number of servings for grains and fruits and vegetables for an individual within age categories and by gender were changed. These changes were not considered in this report which will lead to an **underestimation** of the costs to a household to purchase sufficient grain products and vegetables and fruit.

VII. Conclusions and Recommendations:

This report has provided strong evidence that low income Islanders, including those on social assistance, cannot afford to consume a healthy diet. These findings have a wide range of serious implications. Food insecurity and the inability to purchase healthy foods will contribute to poor quality diets, increased chronic disease, rising health care costs, reduced children's school performance and achievement, and a reduction in the overall capacity of individuals to contribute to the social and economic growth of the province.

Recommendations:

1. The cost of the PEI Nutritious Food Basket should be monitored annually by the provincial government, using standardized and valid methods. Annual reports should be made available to the public.
2. Food costing data should be used to adjust social assistance rates, including special diet allowances, which should also be indexed to inflation
3. Minimum wages should also be increased and be indexed to inflation
4. A inter-departmental inter-sectoral approach is needed in order to address food costs and food insecurity in Prince Edward Island.

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Appendices

Appendix A: Foods Included in PEI Nutritious Food Basket

Note: Only foods in all upper case are included in the food basket; others are included for special diet cost calculations.

FOODS	BAKED BEANS W/TOM SCE, CANNED	ORANGE JUICE, FROZEN, CONCENTRATE	
2% MILK	DRY NAVY BEANS	TOMATOES	
skim milk	PEANUT BUTTER	WHOLE TOMATOES, CANNED	
homogenized milk	lentils	TOMATO JUICE, CANNED	
soy beverage	soy/rice bread	APPLES	
infant formula (Concentrated)	BREAD, ENRICHED, WHITE	BANANAS	
YOGOURT	BREAD, WHOLE WHEAT	GRAPES	
CHEDDAR CHEESE, MEDIUM	HOT DOG/HAMBURG ROLLS	PEARS	
PROCESS CHEESE SLICES	FLOUR, WHITE, ALL PURPOSE	RAISINS	
MOZZARELLA CHEESE	FLOUR, WHOLE WHEAT	FRUIT COCKTAIL, CANNED, JUICE PACK	
VANILLA ICE CREAM	MACARONI/SPAGHETTI	POTATOES, FRESH	
EGGS	RICE, LONG-GRAIN, WHITE	POTATOES, FROZEN	
ROUND STEAK	MACARONI /CHEESE DINNER	FRENCH FRIED	
STEWING BEEF	OATMEAL, REGULAR	BROCCOLI	
HAMBURGER, MEDIUM	CORN FLAKES	CABBAGE	
lean hamburger	SHREDDIES	CARROTS	
PORK CHOPS, LOIN	cream of rice cereal	CELERY	
CHICKEN LEGS, FROZEN	puffed rice	CUCUMBER	GREEN PEAS, CANNED (drained weight)
WIENERS, BEEF & PORK	rice flour	LETTUCE, ICEBERG	MARGARINE, TUB
SLICED HAM	crispy brown rice	LETTUCE, ROMAINE	BUTTER
FROZEN FISH FILLETS	tofu	ONIONS	CANOLA OIL
PINK SALMON, CANNED	SODA CRACKERS, SALTED	GREEN PEPPER	SALAD DRESSING
TUNA, LIGHT, FLAKED	SOCIAL TEAS	TURNIPS	SUGAR, WHITE
CANNED, WATER (drained wt.)	ORANGES	MIXED VEGETABLES, FROZEN	STRAWBERRY JAM
	APPLE JUICE, CANNED OR TETRA	KERNEL CORN, CANNED (drained weight)	baby cereal
			baby fruit/vegetables
			baby meat

From:

16. MacDonald, S. PEI Nutritious Food Basket and Special Diet Costing. PEI Department of Health & Social Services. March, 2000.

Appendix B

Monthly Food Costs by Family Type 2003 to 2013

	PEI July 2003	Queens Co. June 2013	% increase	average annual increase
CHILD				
1 YEAR	87.56	118.80	35.67	3.57
2-3 YEARS	95.96	130.89	36.41	3.64
4-6 YEARS	115.46	158.94	37.66	3.77
BOY				
7-9 YEARS	124.20	174.43	40.44	4.04
10-12 YEARS	154.38	215.66	39.70	3.97
13-15 YEARS	180.69	252.75	39.88	3.99
16-18 YEARS	211.13	296.60	40.48	4.05
GIRL				
7-9 YEARS	119.19	167.24	40.32	4.03
10-12 YEARS	141.85	197.28	39.08	3.91
13-15 YEARS	151.69	212.17	39.87	3.99
16-18 YEARS	144.42	203.41	40.85	4.08
MAN				
19-24 YEARS	199.98	282.16	41.09	4.11
25-49 YEARS	193.47	273.16	41.19	4.12
50-74 YEARS	175.05	246.98	41.09	4.11
75 + YEARS	158.56	223.74	41.11	4.11
WOMAN				
19-24 YEARS	147.77	208.22	40.91	4.09
25-49 YEARS	140.69	198.53	41.11	4.11
50-74 YEARS	137.97	194.75	41.16	4.12
75 + YEARS	134.22	189.25	40.99	4.10
FAMILY OF FOUR	634.04	891.68	40.63	4.06
PREGNANCY AND LACTATION				
13-15 TRI1	166.84	232.62	39.43	3.94
13-15 TRI2	176.04	245.32	39.36	3.94
13-15 TRI3	176.04	245.32	39.36	3.94
13-15 LACT	181.49	252.87	39.33	3.93
16-18 TRI1	166.80	233.50	39.99	4.00
16-18 TRI2	179.22	250.21	39.61	3.96
16-18 TRI3	179.22	250.21	39.61	3.96
16-18 LACT	183.95	257.11	39.77	3.98
19-24 TRI1	162.57	227.54	39.96	4.00
19-24 TRI2	173.66	243.16	40.02	4.00
19-24 TRI3	173.66	243.16	40.02	4.00
19-24 LACT	177.83	249.19	40.13	4.01
25-49 TRI1	155.49	218.24	40.35	4.04
25-49 TRI2	165.13	231.38	40.12	4.01
25-49 TRI3	165.13	231.38	40.12	4.01
25-49 LACT	168.53	236.32	40.22	4.02

** monthly quantities unchanged for each person

Appendix C. Types of Special Diets as Identified in PEI Food Costing Manual

5. Special Diets Costing

The adult special diets (summarized in Table 3) were developed, in most cases, to meet the requirement of an adult (age 25-49) male (2700 calories) and female (1900 calories) who are moderately active.

Table 3: Special Diets costed on Prince Edward Island.

Diabetic	Adult Male and Female	Infant
1200 Calories	Vegetarian	0-3 months
1500 Calories	American Heart Association, Step II	4-11 months
1800 Calories	High Protein-High Energy	
2000 Calories	Gluten-free	
2400 Calories	High Fibre	
2800 Calories	High Calcium	

Vegetarian Diet: This diet eliminated all sources of meat, fish, and poultry. Eggs were also eliminated. Additional milk was incorporated to provide a high source of high biological protein. Citrus fruit was included at each meal to assist the absorption of non-heme iron. Meat alternates such as legumes, nuts, and tofu were included in this diet as alternate sources of protein.

Diabetic Diet: Six different energy level are costed—1200, 1500, 1800, 2000, 2400, and 2800 kilocalories. The energy distribution was 55% from carbohydrates, less than 30% from fat, and 15% from protein. Additional guidelines were that saturated and polyunsaturated fat each contribute less than 10% total energy⁷. Sugar accounts for 10.7 to 13.7% of calories. A meal plan for a person with diabetes would be ideal for anyone who wants to eat well, providing a combination of low fat, low sodium, moderate sugar, and high fibre.

American Heart Association Diet Step II: The nutritious food basket costing for most age and gender categories over 2 years reflects Step I American Heart Association guidelines.⁸ The Step II diet further restricts total fat, saturated fat, and cholesterol.

Step I Recommendations

- Total fat intake should be no more than 30% of calories

⁷ Reference: *Guidelines for the Nutritional Management of Diabetes Mellitus in the New Millennium: A Position Statement by the Canadian Diabetes Association, 1999.*

⁸ Reference: *American Heart Association Dietary Guidelines, 1998.*

From:

16. MacDonald, S. PEI Nutritious Food Basket and Special Diet Costing. PEI Department of Health & Social Services. March, 2000.

- Saturated fatty acid intake should be less than 10% of calories,
- Polyunsaturated fatty acid intake should be 8-10% of calories,
- Monounsaturated fatty acids make up the rest of the total fat intake, about 10-15% of total calories,
- Cholesterol intake should be less than 300 milligrams per day,
- Sodium intake should be no more than 2400 milligrams per day.

American Heart Association Step II recommendations are

- 30% or less of total calories from fat,
- less than 7% of total calories from saturated fat,
- up to 10% of total calories from polyunsaturated fat,
- up to 15% of total calories from monounsaturated fats,
- less than 200 milligrams of dietary cholesterol daily,
- 55-60% of total calories from carbohydrates,
- 15% of total calories from protein,
- just enough calories to maintain a healthy weight.

High Protein-High Energy Diet: The protein requirement for this diet was set at 2.0 g. protein/kilogram body weight. For an “average” female of 59 kg (130 lbs) this would be 118 g of protein daily. An “average” male of 74 kg (163 lbs) would consume 148 g of protein with this diet. This is twice as much protein as would be required for a “normal” diet.

To determine energy requirement, the basic energy level required to maintain weight was used and adjusted using a stress factor of 1.5 times the basic requirement. (Female 2850 calories and male 4050 calories). Fat restrictions of 30% were not adhered to as fat is a concentrated source of energy. Simple sugar was not restricted. To meet increased energy needs, additional fat and sugar are required.

Gluten-free: The gluten-free diet eliminated all sources of gluten from the diet. The NutriWatch Nutrient Analysis program was used to analyze a gluten-free rice bran bread for nutritional properties. The diet was planned based on traditional foods and modifications

where necessary (rice cereals, rice flour, and rice bread).

High Fibre: The male diet of 2700 calories has a dietary fibre intake of 30 g. The female diet of 1900 calories contains 25 g of dietary fibre.

High Calcium: The high calcium diets provide 1800 mg of calcium in the male diet and 1500 mg in the female diet.

Infancy: Two age categories during the first years of life were established to identify the variation in eating patterns. The 0-3 month category represents formula-fed infants and includes no solids. The second category, 4-11 months, represents the infant who receives both solids (mostly prepared "baby foods") and formula.

Renal diets, as such, were not costed. People who require ultra-low sodium diets would probably be in hospital. The main concern for people at home would be if they are on dialysis. There are two types of dialysis. People on **peritoneal dialysis** need high protein so could, as a guideline, use the High Protein-High Energy diet. These people may need to restrict phosphorus, sodium, and potassium intakes, but any restriction is individualized and involves substitutions within groups, e.g. no canned salmon bones if phosphorus is too high. People on **hemodialysis** have to be stricter about their intake, but their diets are individualized. The High Protein-High Energy special diet could also be used as a costing guideline. See Appendix E for the amount of foods assigned to each diet and nutrients provided.