

USING A HOUSEHOLD BUDGET SURVEY TO MEASURE HEALTHY EATING PATTERNS

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Abstract: Along with physical activity, diet is the key factor that affects your weight. Having a healthy weight for your height is important as being overweight or obese increases the risk of medical conditions such as heart disease, type 2 diabetes and high blood pressure. Very little is known about the diet of Irish households and its pattern of change. This paper reviews sources of information and highlights an overlooked source, the Central Statistics Office's Household Budget Survey (HBS). This study expands the use of the information collected from households that participated in the Irish 1999-2000 HBS. The detailed descriptions (including weight and volume data) on the receipts that the households received when they purchased food items were identified as an important new source of information on the nutritional value of this food. This study shows that the food purchased by households in the State, in the period 1999-2000, provided, on average, a calorific value 16% higher than the recommended level of 2,500 calories per day.

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JEL Classifications: C83, D12, I18

1. INTRODUCTION

Having a healthy diet is one of the most important things you can do to help your overall health. Along with physical activity, your diet is the key factor that affects your weight. Having a healthy weight for your height is important. Being overweight or obese increases your risk of heart disease, type 2 diabetes, high blood pressure, stroke, breathing problems, arthritis, gallbladder disease, sleep apnea (breathing problems while sleeping), osteoarthritis, and some cancers.

Diet is, therefore, clearly important to the health of a nation. Yet we know very little about the diet of Irish households and its pattern of change. This paper reviews sources of information and highlights an overlooked source that, with a little effort, can provide continuous, up to date information of diet and its changing patterns, with a very wide coverage. We show how to extract the information and provide initial outputs that show that the food consumption of the population is not consistent with the recommendations of international dietary guidelines.

Having a healthy diet is sometimes easier said than done. It is tempting to eat less healthy foods because they might be easier to get or prepare, or they satisfy a craving. Between family and work or school, you are probably balancing a hundred things at once. Taking time to buy the ingredients for and cooking a healthy meal sometimes falls last on your list. In general, the wrong types of food items are being purchased and in this paper we demonstrate that we can clearly identify them.

The following section provides a general description of the Household Budget Survey (HBS). Section 3 describes the HBS sub-sample data-set used in this study, while Section 4 presents the methodology for converting HBS expenditure information on food to their equivalent weight and volume. In Section 5 we discuss the results of the conversion process and Section 6 discusses the Irish Diet. Section 7, the final section, presents the conclusions of this study.

2. HOUSEHOLD BUDGET SURVEY

The Irish Household Budget Survey (HBS) is a survey of a representative random sample of all private households in the State. It has been undertaken at regular intervals since 1951 and on a five-yearly basis since 1994.

The main purpose of the HBS is to determine in detail the current pattern of household expenditure in order to update the weighting basis of the Consumer Price Index. The maintenance of a detailed diary of household expenditure over a two-week period by the surveyed households is thus the main distinguishing feature of the HBS. In addition, detailed information on all sources of household income is also collected as part of the survey details.

In order to reduce the burden on households when completing the detailed expenditure diaries households have been encouraged since 1994 to attach till receipts (scanner receipts) that contain the details of the purchases to their diaries instead of directly recording such information.

Analysis shows that the vast majority of the scanner receipts relate to the purchase of food items in shops and supermarkets (i.e. food outlets). These receipts contain very detailed descriptions of the individual food items purchased as well as their prices and associated weights (grams) or volumes (litres).

The scanner receipts also aid the CSO when processing data collected from the surveyed households as the item descriptions and price information allow for more accurate coding by reducing transcription errors that can occur when respondents are completing their diaries by hand.

Currently when processing the data on food items only the item descriptions (in the form of a 3-digit identity code) and prices on the scanner receipts are used. This leaves an important source of information on food, namely the data on weights and volumes, unused. This study makes use of the weight and volume data from a sub-sample of the households surveyed in the HBS in order to develop a method which allows for the conversion of the published detailed average weekly household expenditure on food to its equivalent weight or volume.

3. DATA SOURCE

This study utilises the results of the 1999/2000 HBS, which was carried out during the period June 1999 to July 2000, as it provided the most up-to-date HBS data available at the time this study. Some 7,644 household participated in this survey and the detailed scanner receipts data collected from a sub-sample of 945 of these households were used in this study.

The item descriptions, expenditures, weights, volume and number of entries recorded from the household diaries or scanner receipts for each item is presented in aggregated form in Table 3 below.

Food items which are measured by weight account for 86% of the entries recorded, while food items that are measured by volume accounted for 12%. Entries for Vegetables, Meat and Bread, Flour, Biscuits & Cakes, were almost equal in number (approximately 10,000) and in total represented more than half of the entries for food items that are measured by weight.

In terms of expenditure, food items measured by weight again accounted for 86% of the total with Meat showing the highest individual expenditure, while in the case of food items measured by volume Milk & Cream had the highest expenditure.

The data was initially keyed into 4 Excel Files (it took 40 man weeks to complete this task) and then converted into a SAS dataset for final processing and analysis.

Item Description	Grams	Litres	Quantity	Expenditure (€)	No. of entries
<i>Food (by weight)</i>					
Bread, Flour, Biscuits & Cakes	6,261,571	0	0	17,194.12	10,760
Solid Milk Products	1,275,831	0	0	4,452.12	2,417
Cheese	502,174	0	0	3,530.46	1,786
Butter & Fats	1,187,113	0	0	8,338.78	2,410
Meat	4,614,541	0	0	30,179.30	9,755
Fish	459,681	0	0	3,870.73	1,412
Vegetables	9,097,129	0	0	13,312.17	10,624
Fruits & Nuts	3,498,272	0	0	7,097.01	4,943
Miscellaneous Foods	6,135,326	0	0	32,408.14	16,832
<i>Total Food (by weight)</i>	33,031,637	0	0	120,382.85	60,939
<i>Eggs</i>	0	0	9,900	1,343.46	801
<i>Food (by volume)</i>					
Fresh Milk & Cream		5,840.71	0	7,182.17	3,239
Other Fats & Cooking Oils	0	403.35	0	792.23	336
Ice Cream & Juices	0	14,285.01	0	5,260.66	2,314
Soft Drinks	0	12,774.91	0	5,154.30	2,904
<i>Total Food (by volume)</i>	0	33,303.98	0	18,389.35	8,793
Total	33,031,637	33,303.98	9,900	140,115.66	70,533

4. METHODOLOGY

In an ideal world the weight or volume and price data for the food items purchased by responding households in a HBS should also be recorded. However, this is not normally done, as it would substantially add to the amount of time required to process the data.

It is possible, however, to make use of the weight and volume data without compromising data processing time-lines by:

1. selecting a representative sub-sample of responding households and recording the full item description, the product code, price and weight or volume information for the food items listed in their expenditure diaries or on attached scanner receipts
2. from the price and weight or volume data in stage 1 above, estimating the weight or volume per €1 of expenditure for each food item through the use of derived conversion factors
3. applying these conversion factors to the HBS published results to convert the expenditure data to their equivalent or corresponding weight or volume.

5. CONVERTING HBS EXPENDITURE TO WEIGHT AND VOLUME VALUES

Stage 3 of the approach used in this study is to apply the derived conversion factors to the published HBS results in order to convert the expenditure data to their equivalent weight or volume.

To demonstrate this final stage the published HBS1999/2000 average weekly household expenditure classified by Urban/Rural Locations and Gross Income Deciles were converted. This process is shown in aggregated form in Table 1 below for Urban/Rural households. For example, in 1999/2000 households in Urban Locations spent on average of €2.71 each week on white bread and conversion factor for white bread is €1 = 662.02 grams. Therefore, the estimated weight of white bread purchased corresponding to an expenditure of €2.71 using the above conversion factor is 1,791 grams.

This association of weights and volumes to reported expenditure allows interesting additional information to be generated. For example, Farm households in rural areas spent the most on the food items in this study, at €112.55, while households in urban areas spent the least, with an average weekly expenditure of just €85.69. We can now estimate that the Farm households purchased 26.6kg of food measured by weight and 28.4 litres measured by volume while households in urban areas purchased 19.3kg of food measured by weight of and by 24.5 litres measured by volume.

On looking in more detail one can see that Farm households purchased substantially more meat and vegetables than other households in other areas, at 4.6kg and 8kg respectively. (See Table 1).

Chart 1: Food purchased by weight in % by category for Households in Urban Areas - HBS 1999-2000

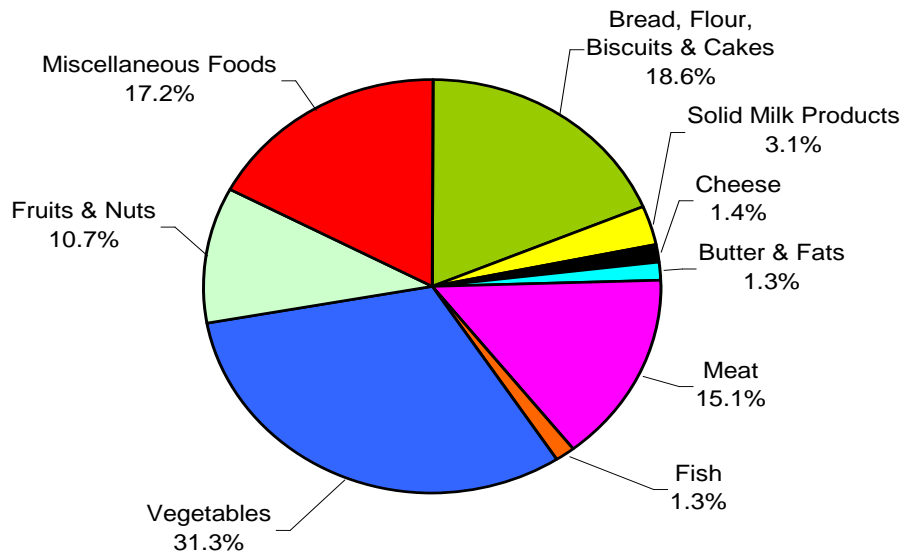
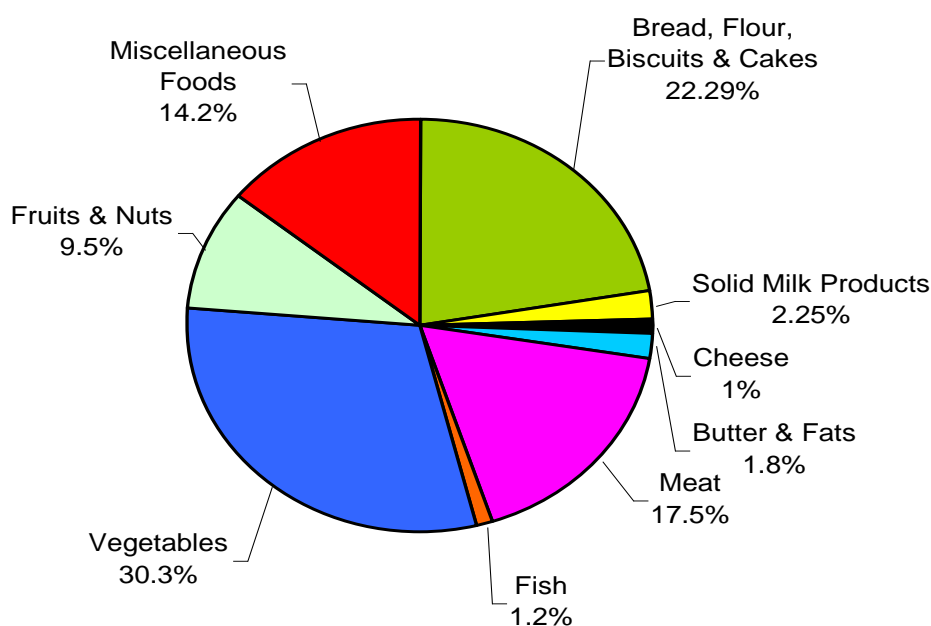


Chart 2: Food purchased by weight in % by category for Rural Farm Households - HBS 1999-2000



Charts 1 & 2 above present the percentage distribution of food purchased by weight for rural farm households and household in urban areas and they show that:

- *Vegetables* account for slightly more than 30% of all food purchased that is measured by weight, while *bread, flour, biscuits & cakes* account for between 20%-22% in rural households and slightly over 18% in urban households. *Potatoes* were the most popular choice of the vegetable, with farm households in rural areas purchasing 4.2kg each week compared with 3kg in urban areas. (See Tables 1 & 2).
- *Fruits & Nuts* accounted for 10% of all food purchased by weight. *Apples, oranges* and *bananas* were the most popular of all fruits purchased with farm households in rural areas purchasing 1.8kg per week and households in urban areas purchasing 1.4kg per week. (See Tables 1 & 2)
- Between 250g and 320g of *fish* was purchased each week by the households in the different urban/rural locations and this accounts for slightly over 1% of all the food purchased by weight. *Fresh* and *tinned fish* were the most popular types purchased. (See Tables 1 & 2)

In relation to food measured by volume some 31% of food measured by *volume* is accounted for by *fresh milk and cream* in farm households in rural areas, as compared to almost 20% for households in urban areas. Ice cream, juices and soft drinks account for almost 80% of food purchased by households in urban areas that is measured by volume. (See Tables 1 & 2)

Table 1: Average Household Size, Weekly Household Expenditure on Food and conversion to equivalent Weight & Volume, HBS1999-2000, classified by Urban Rural Location

Item Description	Urban Areas	Rural Areas				State	Urban Areas	Rural Areas				State
		Farm Hlds	Other Hlds	All Hlds	Rural			Farm Hlds	Other Hlds	All Hlds	Rural	
<i>House Composition</i>	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	
Males	1.42	1.98	1.57	1.65	1.5	1.42	1.98	1.57	1.65	1.5		
Females	1.58	1.58	1.6	1.59	1.58	1.58	1.58	1.6	1.59	1.58		
<i>Total Persons</i>	<i>3.00</i>	<i>3.56</i>	<i>3.16</i>	<i>3.24</i>	<i>3.08</i>	<i>3.00</i>	<i>3.56</i>	<i>3.16</i>	<i>3.24</i>	<i>3.08</i>		
						Weights / Volume / Number						
Food (by weight)	€	€	€	€	€	grams	grams	Grams	grams	grams		
Bread, Flour, Biscuits & Cakes	9.91	14.47	11.16	11.81	10.58	3,587	5,926	4,403	4,700	3,984		
Solid Milk Products	2.12	2.06	2.03	2.04	2.10	598	599	573	580	594		
Cheese	1.84	1.94	1.75	1.79	1.82	262	276	249	255	259		
Butter & Fats	1.68	3.25	2.29	2.48	1.98	247	480	333	360	291		
Meat	19.08	31.18	23.50	25.04	21.23	2,917	4,648	3,553	3,772	3,226		
<i>Fish</i>	<i>2.20</i>	<i>2.79</i>	<i>2.07</i>	<i>2.21</i>	<i>2.18</i>	<i>250</i>	<i>323</i>	<i>239</i>	<i>255</i>	<i>249</i>		
Vegetables	8.06	10.02	8.61	8.86	8.38	6,041	8,051	6,759	7,008	6,397		
Fruits & Nuts	4.20	4.91	4.15	4.28	4.23	2,061	2,525	2,089	2,161	2,098		
Miscellaneous Foods	20.18	20.15	18.95	19.22	19.83	3,317	3,761	3,282	3,379	3,340		
Total Food (by weight)	<i>69.27</i>	<i>90.78</i>	<i>74.51</i>	<i>77.74</i>	<i>72.33</i>	<i>19,280</i>	<i>26,589</i>	<i>21,480</i>	<i>22,469</i>	<i>20,437</i>		
						No.	No.	No.	No.	No.		
<i>Eggs</i>	<i>0.86</i>	<i>1.21</i>	<i>0.98</i>	<i>1.03</i>	<i>0.92</i>	<i>6.4</i>	<i>8.9</i>	<i>7.2</i>	<i>7.6</i>	<i>6.8</i>		
Food (by volume)						litres	litres	litres	litres	litres		
Fresh Milk & Cream	5.92	10.80	7.61	8.26	6.75	4.83	8.86	6.24	6.77	5.52		
Other Fats & Cooking Oils	0.42	0.47	0.47	0.47	0.43	0.21	0.24	0.24	0.24	0.22		
Ice Cream & Juices	3.09	3.16	3.07	3.09	3.09	7.19	6.12	6.65	6.51	6.97		
Soft Drinks	6.13	6.13	5.80	5.88	6.03	12.31	13.20	11.55	11.90	12.14		
Total Food (by volume)	<i>15.56</i>	<i>20.56</i>	<i>16.95</i>	<i>17.69</i>	<i>16.30</i>	<i>24.54</i>	<i>28.42</i>	<i>24.68</i>	<i>25.43</i>	<i>24.85</i>		
Total Expenditure on All Food	85.69	112.55	92.44	96.46	89.55							

Table 2: Average Household Size, Weekly Household Expenditure on Food and conversion to equivalent Weight & Volume in percentage terms, HBS1999-2000, classified by Urban Rural Location

Item Description	Urban Areas	Rural Areas			State	Urban Areas	Rural Areas			State
		Farm Hlds	Other Hlds	All Rural Hlds			Farm Hlds	Other Hlds	All Rural Hlds	
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
<i>House Composition</i>										
Males	1.42	1.98	1.57	1.65	1.5	1.42	1.98	1.57	1.65	1.5
Females	1.58	1.58	1.6	1.59	1.58	1.58	1.58	1.6	1.59	1.58
<i>Total Persons</i>	<i>3.00</i>	<i>3.56</i>	<i>3.16</i>	<i>3.24</i>	<i>3.08</i>	<i>3.00</i>	<i>3.56</i>	<i>3.16</i>	<i>3.24</i>	<i>3.08</i>
<i>Food (by weight)</i>	Expenditure as a %					Weights / Volume / Number as a %				
						grams	grams	grams	grams	grams
Bread, Flour, Biscuits & Cakes	14.30	15.93	14.98	15.19	14.63	18.60	22.29	20.50	20.92	19.49
Solid Milk Products	3.06	2.27	2.73	2.63	2.91	3.10	2.25	2.67	2.58	2.90
Cheese	2.66	2.14	2.35	2.30	2.52	1.36	1.04	1.16	1.13	1.27
Butter & Fats	2.42	3.58	3.07	3.19	2.73	1.28	1.81	1.55	1.60	1.42
Meat	27.54	34.35	31.53	32.22	29.35	15.13	17.48	16.54	16.79	15.79
<i>Fish</i>	3.17	3.08	2.78	2.84	3.02	1.30	1.21	1.11	1.13	1.22
Vegetables	11.64	11.04	11.56	11.40	11.59	31.33	30.28	31.46	31.19	31.30
Fruits & Nuts	6.07	5.41	5.57	5.51	5.85	10.69	9.49	9.73	9.62	10.27
Miscellaneous Foods	29.13	22.20	25.43	24.72	27.42	17.20	14.15	15.28	15.04	16.34
Total Food (by weight)	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100</i>	<i>100.00</i>
						No.	No.	No.	No.	No.
<i>Eggs</i>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
<i>Food (by volume)</i>						litres	litres	litres	litres	litres
Fresh Milk & Cream	38.04	52.50	44.87	46.66	41.41	19.69	31.18	25.26	26.62	22.23
Other Fats & Cooking Oils	2.69	2.29	0.47	0.47	0.43	0.87	0.84	0.97	0.94	0.89
Ice Cream & Juices	19.84	15.38	3.07	3.09	3.09	29.27	21.52	26.96	25.62	28.03
Soft Drinks	39.43	29.83	5.80	5.88	6.03	50.16	46.46	46.81	46.82	48.86
Total Food (by volume)	<i>100.00</i>	<i>100.00</i>	<i>54.22</i>	<i>56.10</i>	<i>50.96</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>

5.1 Consumption per person

It can be seen from *Table 1* that the composition of the households in the rural/urban locations is different. Farm households in rural areas tend to be larger, with an average size of 3.56 persons, while households in urban areas are the smallest with an average size of 3 persons.

This difference in household composition explains, to some extent, why farm households in rural areas have the highest expenditure on the food items in this study (i.e. the larger the household the greater the amount of food consumed). It is, therefore, apparent that in order to obtain a more realistic comparison between the purchases of food by the different types of households that the weight and volume estimates presented in *Table 1* must be adjusted to relate to the average consumption *per person*. In this way the difference in household size and composition can be reduced or eliminated.

The left hand side of *Table 3* below present the estimates of the average weekly weight or volume of food items purchased *per person* by households in urban and rural locations. Almost 1.5 kg more of *food* that is measured by weight is purchased *per person* in farm households than *per person* for households in urban areas. Almost all this difference is accounted for by *bread* (469g), *meat* (334g) and *vegetables* (670g).

The *per person analysis* is not a standardised approach to use when undertaking household comparisons due to varying age and sex compositions of the households and as a result no further analysis of the *per person* data is undertaken in this study. However, interested parties can use the left hand side of *Tables 3*.

5.2 Consumption per adult equivalent

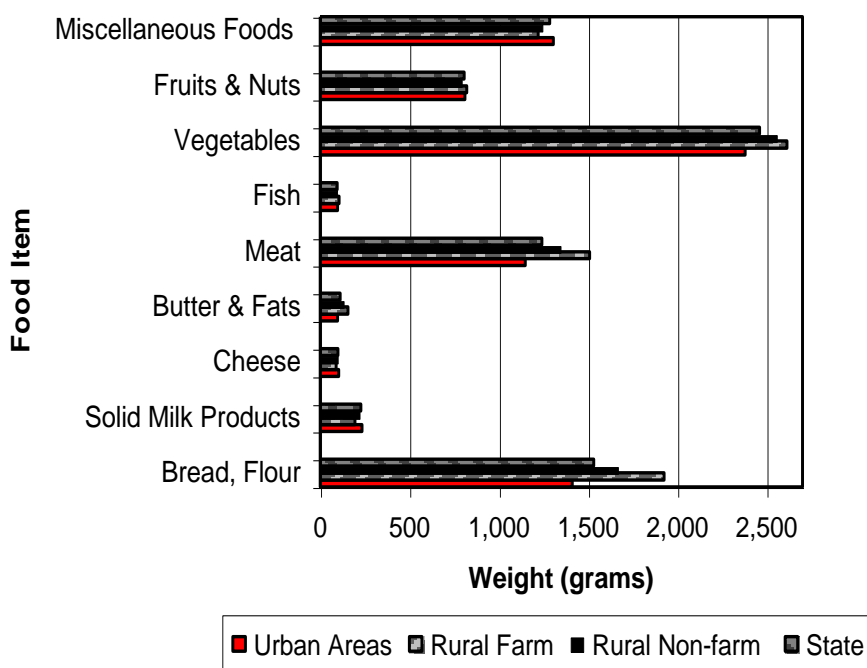
On further examination of the composition of the household in, for example, the urban/rural locations it can be seen that there are differences in the age and sex distributions. To obtain more relevant comparison between the households in the different locations the age and sex distributions in these households must be taken into account. The approach used in this study is to estimate the total number of *adult equivalents* in each household in order to obtain a standard measurement for comparisons.

In 2005 European Food Information Council (EUFIC) indicated that on average a male of age 14 years or more requires some 2,500 calories per day. A female of age 14 years or more requires 2,000 calories per day. Children under 5 require 1,300 calories per day. Male children aged 5-13 years require 1,970 calories per day. And female children aged 5-13 years require 1,740 calories per day. This information was used to estimate the number of *adult equivalent* persons in a household consuming 2,500 calories (i.e. a standard measurement). Males aged 14 years and older are given a weight of 1 (equals 2,500 calories), females aged 14 years and older a weight of 0.8, boys aged 5-13 a weight of 0.79, girls aged 5-13 a weight of 0.7 and children under 5 years a weight of 0.52.

The estimated number of adult equivalents using this approach distributed by urban/rural location and gross household income are presented at the top of *Tables 3 & 4* below. While the centre of *Tables 3 & 4* present the abridged and detailed food data *per adult equivalent*. In practice, this data is the household information from *Table 1* divided by the number of adult equivalents in each urban/rural location and similarly for the gross income deciles.

Chart 3 below presents information on the average weekly weight of Food purchased per adult equivalent in urban/rural locations. In terms of *bread, meat* and *vegetables* farm households purchased in total 6kg *per adult equivalent* each week; which is 1.1kg more than households in urban areas and 0.5kg more than other households in rural areas. (See also Table 3)

Chart 3: Average weekly weight of Food purchased per adult equivalent by Urban/Rural Location - HBS 1999-2000



Households in the lowest income group are the smallest in size (one person) and spend on average €39 per adult equivalent on *Food* each week: this is some €4 more than any other household. This is most likely due to it being more expensive to buy *Food* for one person living on their own than for two or more as many items such as *bread, meat* and *vegetables* come in standard pre-packaged weighted units. It is, therefore, appropriate to conclude that the data for households in this group, while reflecting accurately their spending, is slightly less comparable to the data for other groups.

Tables 3 & 4 below show that households are purchasing on average between 7.5kg and 10.7 kg of food per week that is measured by weight and between 3 and 5 litres of soft drinks *per adult equivalent*. Table 4 shows that households in the higher income groups (i.e. group 6 and above) purchased less *Bread, Flour, Biscuits & Cakes, Butter & Fats, Vegetables, Meat* and more on *Fish, Fruits & Nuts* and *Miscellaneous Food* such as *Sweets & Chocolate, Potato Crisps* and *Pizza*.

As for food measured by volume, household in the higher income groups purchased more *Soft Drinks* and *Fruit & Vegetable Juices*.

These differences reflect the variations in household compositions, with the higher income households containing a younger working adult profile and more persons under the age of 14 years and the lower income households consisting mostly of non-economically active with an older age profile.

5.3 Food Pyramid

In line with international dietary guidelines, the Irish food pyramid was developed (*Figure 1*) which recommended daily consumption of a number of servings from four to five levels for an adult. It is recommended that food stuffs from the top level be eaten sparingly.

Figure 1: The Irish Food Pyramid: Daily recommended number of servings

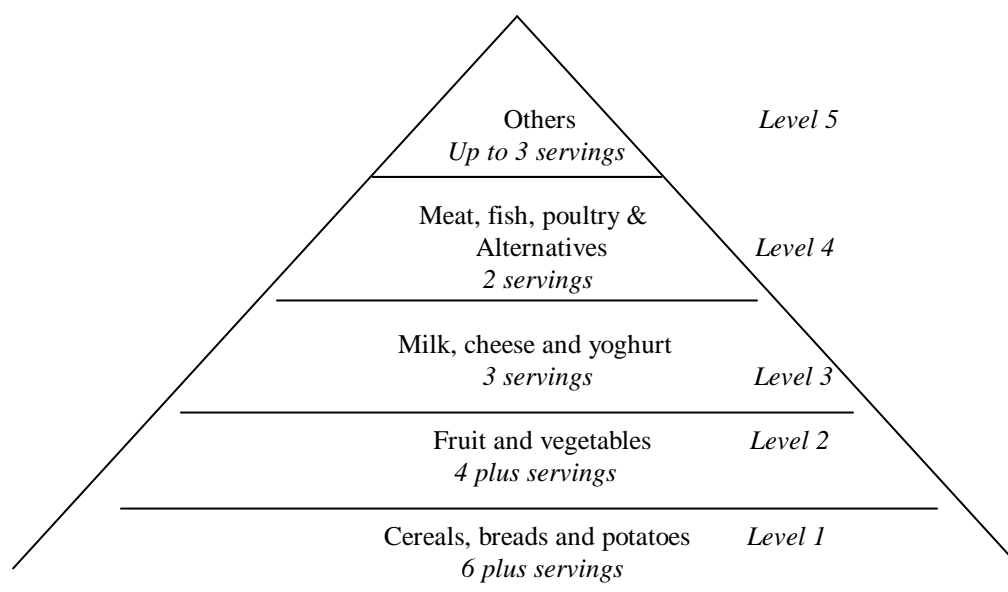


Table 3: Average Household Size, Weekly expenditure on Food per person and adult equivalent converted to equivalent Weight & Volume, HBS1999-2000, classified by Urban Rural Location

Item Description	Urban Areas	Rural Areas			State	Urban Areas	Rural Areas			State
		Farm Hlds	Other Hlds	All Rural Hlds			Farm Hlds	Other Hlds	All Rural Hlds	
	<i>Per Person</i>					<i>Per Adult Equivalent</i>				
<i>House Composition</i>	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Males	1.42	1.98	1.57	1.65	1.5	1.33	1.87	1.45	1.55	1.39
Females	1.58	1.58	1.6	1.6	1.58	1.21	1.21	1.20	1.21	1.21
<i>Total Persons</i>	<i>3.00</i>	<i>3.56</i>	<i>3.16</i>	<i>3.24</i>	<i>3.08</i>	<i>2.54</i>	<i>3.08</i>	<i>2.65</i>	<i>2.75</i>	<i>2.60</i>
	<i>Weights / Volume / Number</i>					<i>Weights / Volume / Number</i>				
Food (by weight)	grams	grams	grams	grams	grams	grams	grams	grams	grams	grams
Bread, Flour, Biscuits & Cakes	1,196	1,665	1,393	1,451	1,293	1,412	1,924	1,661	1,709	1,532
Solid Milk Products	199	168	181	179	193	235	194	216	211	228
Cheese	87	78	79	79	84	103	90	94	93	100
Butter & Fats	82	135	105	111	94	97	156	126	131	112
Meat	972	1,306	1,124	1,164	1,048	1,149	1,509	1,341	1,372	1,241
<i>Fish</i>	83	91	76	79	81	98	105	90	93	96
Vegetables	2,014	2,262	2,139	2,163	2,077	2,378	2,614	2,550	2,548	2,460
Fruits & Nuts	687	709	661	667	681	811	820	788	786	807
Miscellaneous Foods	1,106	1,056	1,039	1,043	1,084	1,306	1,221	1,239	1,229	1,285
<i>Total Food (by weight)</i>	<i>6,427</i>	<i>7,469</i>	<i>6,797</i>	<i>6,935</i>	<i>6,635</i>	<i>7,590</i>	<i>8,632</i>	<i>8,105</i>	<i>8,171</i>	<i>7,860</i>
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Eggs	2.1	2.5	2.3	2.3	2.2	2.5	2.9	2.7	2.8	2.6
Food (by volume)	litres	litres	litres	litres	litres	litres	litres	litres	litres	litres
Fresh Milk & Cream	1.61	2.49	1.97	2.09	1.79	1.90	2.88	2.35	2.46	2.12
Other Fats & Cooking Oils	0.07	0.07	0.08	0.07	0.07	0.08	0.08	0.09	0.09	0.08
Ice Cream & Juices	2.40	1.72	2.11	2.01	2.26	2.83	1.99	2.51	2.37	2.68
Soft Drinks	4.10	3.71	3.66	3.67	3.94	4.85	4.29	4.36	4.33	4.67
<i>Total Food (by volume)</i>	<i>8.18</i>	<i>7.98</i>	<i>7.81</i>	<i>7.85</i>	<i>8.07</i>	<i>9.66</i>	<i>9.23</i>	<i>9.31</i>	<i>9.25</i>	<i>9.56</i>

Table 4: Average household weekly expenditure per Adult Equivalent on Food converted to Equivalent Weight, Volume and No., HBS 1999-2000, classified by gross Household Income Deciles

Item Description	1st decile <132.05	2nd decile - 214.46	3rd decile - 305.97	4th decile - 473.59	5th decile - 531.46	6th decile - 664.19	7th decile - 810.79	8th decile - 1,016.63	9th decile - 1,339.22	10th decile > 1,339.22	State
<i>House Composition</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Males	0.43	0.86	1.07	1.25	1.43	1.56	1.67	1.83	1.82	2.03	1.39
Females	0.54	0.83	1.02	1.2	1.27	1.36	1.39	1.44	1.49	1.57	1.21
<i>Total Persons</i>	0.97	1.69	2.09	2.45	2.70	2.92	3.06	3.27	3.31	3.60	2.60
	per Adult Equivalent										
	Weight / Volume / Number										
<i>Food (by weight)</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>	<i>grams</i>
Bread, Flour, Biscuits & Cakes	2,471	1,907	1,769	1,590	1,526	1,441	1,416	1,411	1,381	1,336	1,532
Solid Milk Products	160	164	191	189	211	247	234	254	245	273	228
Cheese	94	87	88	84	85	96	94	108	111	124	100
Butter & Fats	200	159	135	117	113	104	98	99	94	87	112
Meat	1,549	1,390	1,311	1,161	1,216	1,200	1,197	1,232	1,259	1,164	1,241
<i>Fish</i>	117	102	89	87	85	95	87	94	95	116	96
Vegetables	3,700	3,020	2,768	2,444	2,427	2,324	2,332	2,307	2,267	2,206	2,460
Fruits & Nuts	946	805	786	702	746	741	749	797	840	956	807
Miscellaneous Foods	1,474	1,175	1,224	1,193	1,210	1,257	1,234	1,287	1,364	1,402	1,285
<i>Total Food (by weight)</i>	10,710	8,810	8,361	7,567	7,619	7,506	7,442	7,590	7,656	7,664	7,861
	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
<i>Eggs</i>	4.7	3.1	3.2	2.5	2.5	2.6	2.3	2.4	2.3	2.3	2.6
<i>Food (by volume)</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>	<i>litres</i>
Fresh Milk & Cream	2.81	2.45	2.52	2.31	2.18	2.03	2.08	2.08	1.86	1.85	2.14
Other Fats & Cooking Oils	0.08	0.07	0.10	0.08	0.08	0.09	0.09	0.08	0.08	0.09	0.08
Ice Cream & Juices	1.65	1.83	1.93	2.12	2.49	2.69	2.83	2.70	3.13	3.67	2.68
Soft Drinks	2.98	2.99	3.90	4.58	4.40	4.93	4.90	5.13	5.27	5.20	4.67
<i>Total Food (by volume))</i>	7.52	7.34	8.45	9.09	9.16	9.75	9.91	9.99	10.34	10.80	9.57

Table 5 below presents a translation of the recommendations of the Irish Food Pyramid into weekly weight and volumes for a selection *food* items and the corresponding HBS figures.

Table 5: Food Pyramid - Recommended daily and weekly servings and estimated calorific content										
Food Pyramid	Food Item	Recommended daily No. of Servings	Serving Size (grams/ml)	Calories	Recommended daily		Recommended weekly		HBS estimate per adult equivalent	
					wt/vol	Calories	wt/vol	Calories	wt/vol	Calories
Food (by weight)			grams	No.	grams	No.	grams	No.	grams	No.
Level 1	Cereals	2	150	150	300	300	2,100	2,100	100	100
	Bread	3	40	100	120	300	840	2,100	1,131	2,827
	Potatoes	3	150	70	450	210	3,150	1,470	1,245	581
	<i>Total</i>	8	340		870	810	6,090	5,670	2,476	3,508
				320						
Level 2	Fruit	3	100	50	300	150	2,100	1,050	780	403
	Vegetables	3	100	80	300	240	2,100	1,680	1,215	1,387
	<i>Total</i>	6	200	130	600	390	4,200	2,730	1,995	1,790
Level 3	Cheese	1	25	110	25	110	175	770	100	398
	Yogurt	1	125	60	125	60	875	420	216	228
	<i>Total</i>	2	150	170	150	170	1,050	1,190	316	626
Level 4	Meat/Poultry	1	100	300	100	300	700	2,100	1,241	3,723
	Fish	1	100	200	100	200	700	1,400	96	191
	<i>Total</i>	2	100	500	200	500	1,400	3,500	1,337	3,914
Level 5	Chocolate	1	40	250	40	250	280	1,750	1,736 [^]	6,500
<i>Total Food (by weight)</i>					1,860	2,120	13,020	14,840	7,860	16,338
Food (by volume)			litres	No.	litres	No.	Litres	No.	Litres	No.
Level 3	Milk	1	0.250	70	0.250	70	1.75	490	2.12	1,487
Level 5	Soft Drinks	1	0.333	140	0.333	140	2.33	980	7.44 [^]	2,468
<i>Total Food (by volume)</i>					0.583	210	4.08	1,470	9.56	3,955
<i>Total Calories</i>						2,330		16,310		20,293

[^] All other food items not accounted for above.

[^] All other volume items not accounted for above.

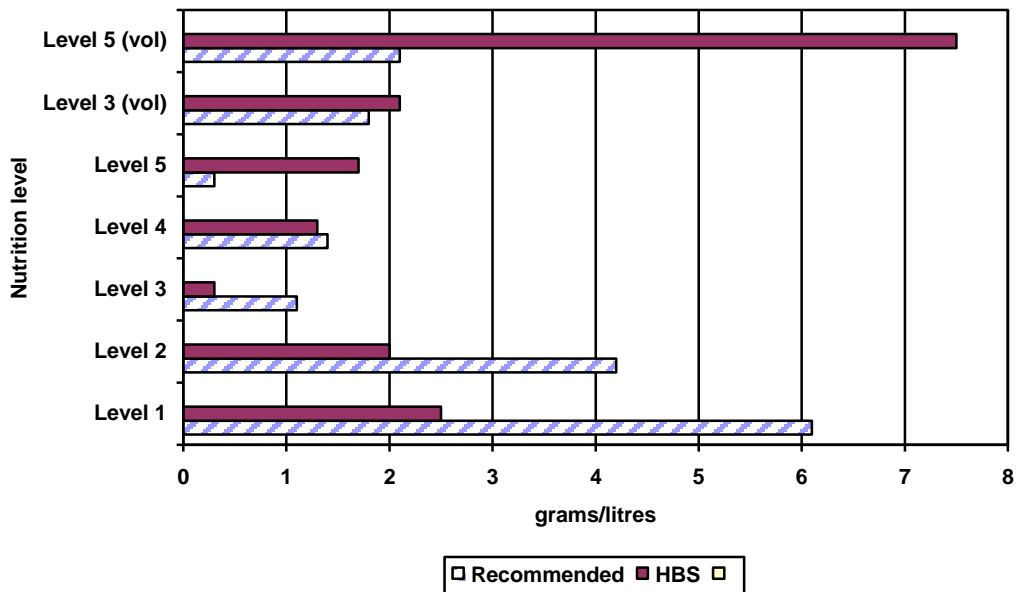
The total recommend consumption of food *measured by weight* is 13kg: with *Level 1, 2 & 3* food items making up 11.3kg or 87% of the total. For food *measured by volume* the recommendation is for 4 litres split almost equally between *milk* and *soft drinks*.

On comparing these figures to the estimates to those of the HBS one can see that the HBS estimates are in total *5.2kg below the recommended values* for food measured by weight. In more detail they are:

- 3.6kg below the *Level 1* recommendation, corresponding to too much bread (0.3kg) and not enough cereals and potatoes (3.9kg);
- 2.2kg below *Level 2* recommendation, corresponding to 1.3kg less fruit and 0.9kg less vegetables;
- 0.7kg below *Level 3* recommendation, mostly due to yoghurt;
- matches *Level 4* recommendation and
- 1.5kg above *Level 5* recommendation.

As for food measured by volume the HBS is 5.1 litres above the recommended *Level 5* volume due mainly to soft drink and ice cream.

Chart 4: Comparison of HBS and recommended Nutrition sources



5.4 Calorific content of food purchased per adult equivalent

The detailed weight and volume food data in this study allow for the estimation of their calorific content. This can be done either at a detailed level or at an aggregated level. *Tables 6 & 7* below presents the estimation of the calorific content of the food items at an aggregated level *per adult equivalent* purchased each week by households in urban/rural location and gross household income decile.

For each *food category* on the left hand side of *Table 6* the average calorific value of its components were obtained per 100g or litre from international nutrition sources (i.e. 1st column of the table). Then by simply multiplying these values by the corresponding average weekly

purchases of food *per adult equivalent* measured by weight, No., and volume (i.e. columns 2-6 of *Table 6*) the corresponding calorific values are estimated (i.e. columns 7-11 of *Table 6*).

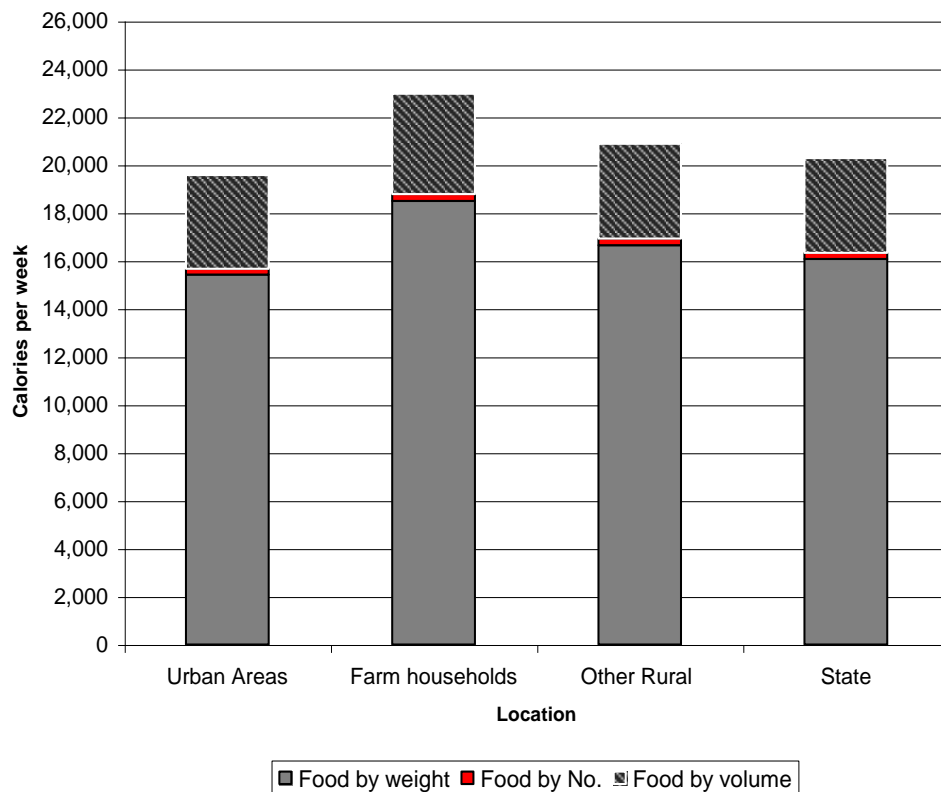
5.4.1 Households had 16% more calories available than required

On converting the average purchases *per adult equivalent* it can be seen that food purchased per week that is measured by weight had a calorific value of between 19,500 and 25,700 which gives an average of 20,300 for the State.

The EUFIC estimates that an adult requires a weekly intake of 17,500 calories (i.e. 2,500 per day). Thus the food purchased by households in the State provided, on average, a calorific value 16% higher than the recommended level.

Looking in more detail one can see that the food purchased per week by rural households had a calorific value of 22,518 which is 29% higher than the recommended level. *See Table 6 and Chart 4*. While the food purchased per week by household in the lowest income group had a calorific value of 25,685, which is 47% higher than the recommended level. *See Table 7*.

Chart 5: Calorific value, per adult equivalent, of food purchased each week - HBS 1999-2000



5.4.2 Bread, meat, vegetables, milk and soft drinks are the main sources of calories

The combined calorific value of bread, butter & fats, meat and vegetables purchased per adult equivalent each week for household in the State, at 12,934 accounts for 63.7% of the total. While fish and fruit & nuts accounted for 2.9% of total calories. See Tables 6 & 7.

5.4.3 Soft drinks accounted for over 10% of total calories in higher income households

Over 10% of total calorific value from the food purchased by households in the higher income groups (i.e. group 6 and above) was from soft drinks, as compared to just 4.8% in the lowest income group. (See Table 7 and Chart 6)

In addition, when the food items for these household were assigned to the levels associated with the nutrition pyramid (see Figure 1) the food items in Level 5 (i.e. to be eaten sparingly as they have the least nutritional value) accounted for over 34% their total calorific value as compared to 25% in the lower income groups.

Chart 6: Calorific values in percent, per adult equivalent, of food purchased per week, HBS 1999-2000, classified by highest and lowest gross Income Decile

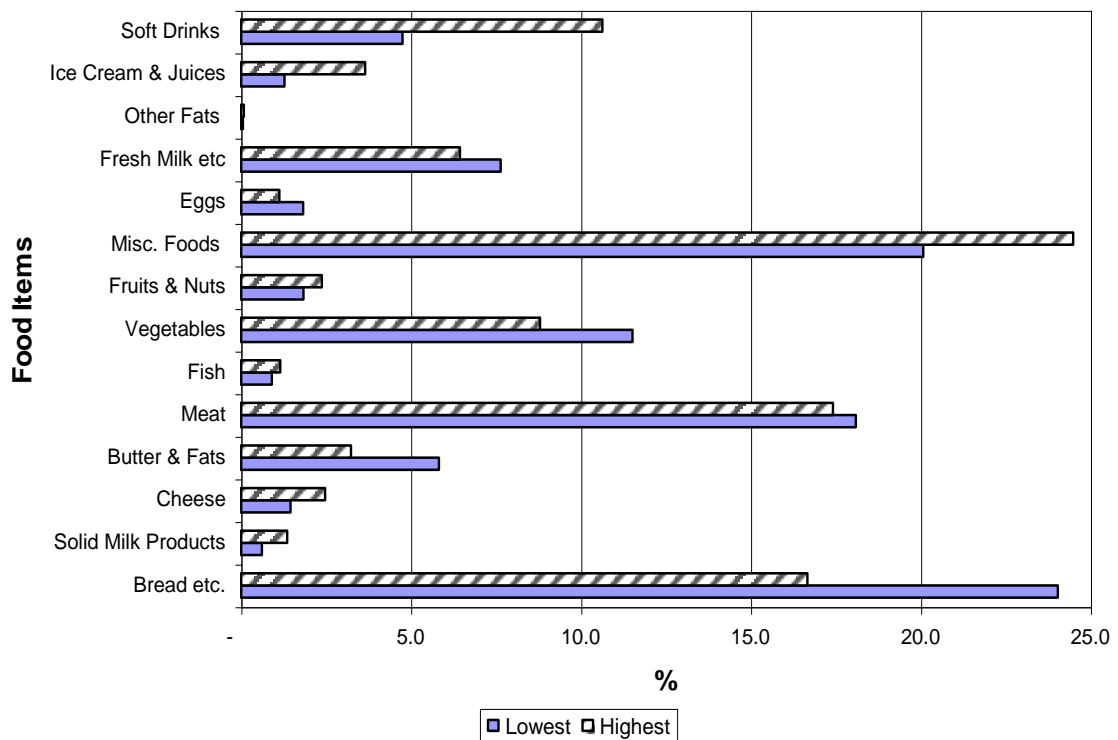


Table 6: Average Household Size, Weight & Volume Food purchased weekly per adult equivalent converted to calorific equivalent., HBS1999-2000, classified by Urban Rural Location

Item Description	Calories per 100g or 1L	Urban Areas	Rural Areas			State	Urban Areas	Rural Areas			State
			Farm Hlds	Other Hlds	All Hlds			Farm Hlds	Other Hlds	All Hlds	
		<i>Per Adult Equivalent</i>					<i>Per Adult Equivalent</i>				
<i>House Composition</i>		No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Males		1.33	1.87	1.45	1.55	1.39	1.33	1.87	1.45	1.55	1.39
Females		1.21	1.21	1.20	1.21	1.21	1.21	1.21	1.20	1.21	1.21
<i>Total Persons</i>		2.54	3.08	2.65	2.75	2.60	2.54	3.08	2.65	2.75	2.60
		<i>Weights / Volume / Number</i>					<i>Calories</i>				
<i>Food (by weight)</i>		grams	grams	grams	grams	grams					
Bread, Flour, Biscuits & Cakes	250	1,412	1,924	1,661	1,709	1,532	3,530	4,810	4,154	4,273	3,831
Solid Milk Products	100	235	194	216	211	228	235	194	216	211	228
Cheese	400	103	90	94	93	100	412	359	376	370	398
Butter & Fats	750	97	156	126	131	112	728	1,170	943	983	838
Meat	300	1,149	1,509	1,341	1,372	1,241	3,446	4,527	4,022	4,115	3,723
<i>Fish</i>	200	98	105	90	93	96	197	210	180	185	191
Vegetables	80	2,378	2,614	2,550	2,548	2,460	1,903	2,091	2,040	2,039	1,968
Fruits & Nuts	50	811	820	788	786	807	406	410	394	393	403
Miscellaneous Foods	350	1,306	1,221	1,239	1,229	1,285	4,570	4,274	4,335	4,300	4,496
<i>Total Food (by weight)</i>		7,590	8,632	8,105	8,171	7,860	15,428	18,045	16,661	16,869	16,077
		No.	No.	No.	No.	No.	<i>Calories</i>				
Eggs	100	2.5	2.9	2.7	2.8	2.6	251	289	272	276	261
<i>Food (by volume)</i>		litres	litres	litres	litres	litres	<i>Calories</i>				
Fresh Milk & Cream	700	1.90	2.88	2.35	2.46	2.12	1,332	2,014	1,647	1,723	1,487
Other Fats & Cooking Oils	200	0.08	0.08	0.09	0.09	0.08	17	16	18	17	17
Ice Cream & Juices	200	2.83	1.99	2.51	2.37	2.68	566	397	502	474	536
Soft Drinks	410	4.85	4.29	4.36	4.33	4.67	1,987	1,758	1,788	1,775	1,915
<i>Total Food (by volume)</i>		9.66	9.23	9.31	9.25	9.56	3,902	4,184	3,955	3,989	3,955
<i>Total Calories</i>							19,580	22,518	20,888	21,134	20,293

Table 7: Average Household Size, Weight & Volume Food purchased weekly per adult equivalent converted to calorific equivalent., HBS1999-2000, classified by Gross Income Decile

Item Description	1st decile <132.05	2nd decile - 214.46	3rd decile - 305.97	4th decile - 473.59	5th decile - 531.46	6th decile - 664.19	7th decile - 810.79	8th decile - 1,016.63	9th decile - 1,339.22	10th decile > 1,339.22	State
<i>House Composition</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>	<i>No.</i>
Males	0.43	0.86	1.07	1.25	1.43	1.56	1.67	1.83	1.82	2.03	1.39
Females	0.54	0.83	1.02	1.2	1.27	1.36	1.39	1.44	1.49	1.57	1.21
<i>Total Persons</i>	0.97	1.69	2.09	2.45	2.70	2.92	3.06	3.27	3.31	3.60	2.60
<i>Food (by weight)</i>	per Adult Equivalent										
	Calories										
Bread, Flour, Biscuits & Cakes	6,177	4,767	4,423	3,976	3,816	3,602	3,540	3,528	3,452	3,340	3,831
Solid Milk Products	160	164	191	189	211	247	234	254	245	273	228
Cheese	375	347	354	334	341	386	376	432	443	498	398
Butter & Fats	1,496	1,195	1,010	875	846	780	737	746	708	650	840
Meat	4,648	4,171	3,932	3,483	3,648	3,601	3,590	3,697	3,776	3,492	3,723
<i>Fish</i>	234	205	178	173	170	189	174	189	190	232	192
Vegetables	2,960	2,416	2,214	1,955	1,942	1,859	1,866	1,846	1,814	1,765	1,968
Fruits & Nuts	473	402	393	351	373	371	375	398	420	478	403
Miscellaneous Foods	5,158	4,114	4,282	4,175	4,235	4,398	4,320	4,505	4,773	4,908	4,496
<i>Total Food (by weight)</i>	<i>21,681</i>	<i>17,781</i>	<i>16,979</i>	<i>15,512</i>	<i>15,582</i>	<i>15,434</i>	<i>15,211</i>	<i>15,593</i>	<i>15,822</i>	<i>15,636</i>	<i>16,080</i>
	Calories										
<i>Eggs</i>	471	314	317	250	246	257	231	243	232	227	261
<i>Food (by volume)</i>	Calories										
Fresh Milk & Cream	1,964	1,714	1,765	1,617	1,526	1,422	1,459	1,457	1,299	1,292	1,497
Other Fats & Cooking Oils	17	14	19	16	17	18	18	17	15	18	17
Ice Cream & Juices	330	366	387	424	497	539	567	540	626	733	536
Soft Drinks	1,222	1,228	1,601	1,878	1,805	2,021	2,010	2,103	2,162	2,133	1,915
<i>Total Food (by volume)</i>	<i>3533</i>	<i>3321</i>	<i>3771</i>	<i>3935</i>	<i>3846</i>	<i>4000</i>	<i>4054</i>	<i>4116</i>	<i>4102</i>	<i>4176</i>	<i>3965</i>
<i>Total Calories</i>	<i>25,685</i>	<i>21,416</i>	<i>21,067</i>	<i>19,696</i>	<i>19,673</i>	<i>19,691</i>	<i>19,497</i>	<i>19,952</i>	<i>20,156</i>	<i>20,039</i>	<i>20,305</i>

6. THE IRISH DIET

For many centuries the Irish diet was limited to what could be raised or manufactured locally, or imported from Great Britain. The foods of Ireland have often been described as "bland," primarily due to the prolific use of potatoes and cabbage. Potatoes came to Ireland by way of South America, and by 1688, they had become a staple of the Irish diet.

The potato has long been considered a staple for the poor. Throughout Irish history less well off people have relied heavily on it for subsistence. Potatoes contain plentiful carbohydrates and some protein, calcium, and niacin. They are easy to grow and store and according to food experts, a diet of potatoes and milk will supply all the nutrients the human body needs.

Oats were also a staple in the Irish diet, to feed not only the family, but to also support the livestock that worked the fields with porridge and oatmeal breads being enduring favourites.

From the 1930s onwards Ireland expanded and diversified its crops to include wheat, barley, and sugar beets, in addition to the favoured potatoes and oats. The fishing industry is also a major part of Irish life, and we are fond of cod, herring, salmon and haddock.

However now if you live in North America or the European Union, or in any other industrialised western country and asked the question "What do Irish people eat?" the short answer to is mostly going to be, "Pretty much what you do." The Irish diet has been almost completely changed by the vast improvements in transport in the last four decades, and especially by the advent of less expensive and now cheap air travel. In the early 1970's, the then-growing supermarket chains (wisely) began giving their customers what they wanted -- which, at the time, was anything *but* Irish traditional food.

The mid-20th century meat-and-potatoes diet began to shift. Frozen foods appeared, featuring dishes that had a more European slant. Vegetables that were not native to Ireland started to appear. Even salads caught on. In short, many traditional foods survive, but with a rich overlay of new foods and flavours from all over the world, and the average Irish diet is as likely to include burritos, frozen pizza and beef Stroganoff as it is Irish lamb stew and soda bread.

However, amongst the frozen foods are items such as burgers, chips and fried chicken dishes (i.e. all foods that can be served from frozen in a very short period of time). These foods, which have a *Level 5* nutritional rating, have become a regular part of the Irish diet. This is supported by the Department of Health and Children's SLÁN¹ survey which shows that, in 2002, 83% of the persons they surveyed consumed more than the recommended three servings of *Level 5* foods per day. At a European level studies² of the Irish Diet in the 1990s also support the findings in this paper on degree of divergence from the recommendations of the Irish Food Pyramid.

7. CONCLUSIONS

The goal of this study was to expand the use of the information collected from households that participated in the Irish 1999-2000 Household Budget Survey. The detailed descriptions (including weight and volume data) on the receipts that the households received when they

¹ An ad-hoc SLÁN survey has been undertaken by the Health Promotion Unit of the Departments of Health on three occasions, 1998, 2002 and the last in 2006. Some six thousand persons participate in this survey and over a one week period they keep a detailed record of the food they cooked and consumed.

² The European Commission has developed a Pan-European food data bank based on the expenditure data from household budget surveys through the *DATA Food NETWORKING (DAFNE)* project.

purchased food items were identified as an important new source of information on the nutritional value of this food.

It has been demonstrated that the types and quantities of food, as well as their nutritional values, being purchased by the average household in Ireland can indeed be identified from a HBS. This new source of nutritional information can be used to provide data for a wide selection of household classifications. Urban/rural location and income groups were the classifications used in this study. However, the HBS can also be used to provide information for classifications such as: region, social class, household tenure and livelihood status.

The results of this study show that food being purchased by the average household in Ireland eight years ago was not consistent with the recommendations of the nutrition pyramid. The wrong types of food items were being purchased and the HBS was used to clearly identify them.

The HBS weekly estimates *per adult equivalent* were in total 5.2kg below the recommended values for food measured by weight. In more detail they were:

- 3.6kg below the *Level 1* recommendation, corresponding to too much bread (0.3kg) and not enough cereals and potatoes (3.9kg);
- 2.2kg below *Level 2* recommendation, corresponding to 1.3kg less fruit and 0.9kg less vegetables;
- 0.7kg below *Level 3* recommendation, mostly due to yoghurt;
- matches *Level 4* recommendation and
- 1.5kg above *Level 5* recommendation.

As for food measured by volume the HBS is 5.1 litres above the weekly recommended *Level 5* volume due mainly to soft drink and ice cream.

On converting the average purchases *per adult equivalent* food purchased per week that is measured by weight had a calorific value of between 19,500 and 25,700 which gives an average of 20,300 for the State.

The EUFIC estimates that an adult requires a weekly intake of 17,500 calories (i.e. 2,500 per day). Thus the food purchased by households in the State provided, on average, a calorific value 16% higher than the recommended level.

The food purchased per week by rural households had a calorific value of 22,518 which is 29% higher than the recommended level. While the food purchased per week by household in the lowest income group had a calorific value of 25,685, which is 47% higher than the recommended level *per adult equivalent*.

Bread, meat, vegetables, milk and soft drinks were the main sources of calories and their combined total of 12,934 calories accounted for 63.7% of the total.

Over 10% of total calorific value from the food purchased by households in the higher income groups (i.e. group 6 and above) was from soft drinks, as compared to just 4.8% in the lowest income group.

In addition, when the food items for these household were assigned to the levels associated with the nutrition pyramid the food items in *Level 5* (i.e. to be eaten sparingly as they have the least nutritional value) accounted for over 34% their total calorific value as compared to 25% in the lower income groups

Finally, a cornerstone of a competitive knowledge-based economy is the health of its citizens and in recent years, the promotion of healthy eating has become a key policy of Government. Advertising campaigns are undertaken at regular intervals focusing on the importance of healthy eating through the consumption of balanced meals. It is clear from this study that with a small amount of effort a HBS could be used for regular monitoring of the effects of such campaigns on the our diet. As well as identifying the wrong food types the HBS, of course, could be used to promote the purchase of more nutritionally appropriate food items (i.e. Level 1 & 2) by clearly showing the good for bad swap that must occur.

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VOTE OF THANKS PROPOSED BY PROFESSOR IVAN PERRY, UCC

Healthy diets and regular, adequate physical activity are major factors in the promotion and maintenance of good health throughout the entire life course. Unhealthy diets and physical inactivity are two of the main risk factors for raised blood pressure, raised blood glucose, abnormal blood lipids, overweight/obesity, and for the major chronic diseases such as cardiovascular diseases, cancer, and diabetes [1]. Based on data from the WHO Global Burden of Disease Study it is estimated that approximately 2.7 million deaths annually worldwide are attributable to low fruit and vegetable intake and approximately 2.5 million deaths are attributable to obesity [2]. While there is a public perception of controversy in relation to the effects of diet on health there is in fact an overwhelming scientific consensus on a small number of core recommendations to guide both individuals and policy makers in this area. Thus public policy on diet and nutrition in Ireland, as in other developed countries, needs to address the following core recommendations:-

- achieve energy balance and a healthy weight (i.e promote walking and cycling and reduce average portion size/serving size)
- limit energy intake from total fats and shift fat consumption away from saturated fats (mainly meat and dairy) to unsaturated fats (plant derived and fish) and towards the elimination of trans-fatty acids (synthetic fats in processed foods including biscuits and other confectionary)
- increase consumption of fruits and vegetables, and legumes, whole grains and nuts
- limit the intake of free sugars (as in soft drinks)
- limit salt (sodium) consumption from all sources and ensure that salt is iodized.

Progress toward public policy objectives on diet and nutrition is critically dependant on timely and reliable data on dietary patterns and nutrient intakes in the population. However, the measurement of dietary intake is fraught with difficulty for several reasons, including the following:

- the imprecision of portion size estimation,
- the unreliability of individuals recall of either usual intakes (as in food frequency questionnaires) or recent intake (as in 24 hour diet recall),
- systematic measurement error due to observer effects (as in weighted food diaries),
- the effects of random and systematic variation due to poor response rates to national surveys combined with day of week and seasonal effects on diet,
- the lack of valid and reliable biomarkers that are feasible and affordable for use in large scale population surveys.

Thus there is no gold standard for assessing dietary intakes in the population. However, Kevin McCormack's paper: "Using a household budget survey to measure healthy eating patterns" represents an important and methodologically novel addition to the range of options currently available to assess and monitor diet and nutrition in the Irish population. As described in McCormack's paper, the Irish Household Budget Survey (HBS) examines the current pattern of household expenditure in a representative, random sample of all private households in the State. Respondents provide a detailed diary of household expenditure over a two-week period and are asked to append copies till receipts (scanner receipts) to their diary. The latter (till receipts) contain the details of all purchases over the relevant 2 week-period. These receipts contain very detailed descriptions of the individual food items purchased in addition to their prices and associated weights (grams) or volumes (litres). In this paper, McCormack has used the weight and volume data from a sub-sample of the households surveyed in the HBS to develop a method which allows for the conversion of the estimated average weekly household expenditure on food to its equivalent weight or volume. Till receipts are an important source of dietary data with considerable potential to enhance the precision of estimates derived from other survey methods [3] and McCormack's method provides an excellent example of an innovative and extremely efficient use of data collected for a different purpose.

One of the major findings from McCormack's analyses of the 1999/2000 HBS data was that the calories available to households per adult equivalent exceeded recommended daily requirement by 16%, equivalent to approximately 400 excess calories per adult equivalent per day. This finding is plausible and entirely consistent with the increasing prevalence of overweight and obesity observed in Ireland over the past decade [4]. It is also plausible that a significant proportion of these excess calories are apparently derived from chocolate and soft drinks. It is instructive to compare some of the findings from these analyses, based on data collected in 1999 to 2000 with the SLÁN 1998 [5] and SLÁN 2002[6] national health and lifestyle surveys, (See Table 1). The SLÁN dietary data are based on standardised food frequency questionnaires administered to adults sampled at household level with response rates of approximately 60%. Comparing food energy intake (kcal) from different food pyramid groups (Table 1), estimates of calories from cereals, breads and potatoes available for consumption from the HBS and calories consumed in SLÁN are remarkably similar, despite the different data collection methods, 3508 kcal, 3570 kcal and 3453 kcal respectively. Estimated energy intakes from fruit and vegetables were also broadly similar across the three surveys (1790 kcal, 1217 kcal and 1361 kcal) for HBS, SLÁN 1998 and SLÁN 2002 respectively. Energy available from meat, fish and poultry products were somewhat higher in the HBS data than in the SLÁN surveys and estimates of energy derived from soft drinks and chocolate were significantly higher in the HBS data relative to the SLÁN survey data. Given the choice between self report and till receipts to estimate energy intake from soft drinks and chocolate, I would suggest that most would favour the latter method of data collection.

In summary, Kevin McCormack has made an important methodological contribution to work on the estimation of dietary patterns and nutrient intakes in the Irish population. There is a need for a more detailed formal comparison of the findings from these analyses with the SLÁN survey data. In particular it will be important to repeat the analyses carried out on the 1999/2000 HBS data with the more recent (2005) HBS data and compare the HBS findings on diet and nutrition with those available from the 2007 SLÁN survey, SLÁN-07[4]. It is clear that the dietary data from the Household Budget Survey complements and extends the finding from the National Health & Lifestyle (SLÁN) surveys. In future work, we need to consider how best to enhance synergies between these different approaches to population level dietary assessment, perhaps by collecting till receipts from all or a sample of SLÁN survey respondents.

Table 1: Comparison of estimates of food energy (kcal) available for consumption from the household budget survey (1999/2000) and food energy consumed in the SLÁN 1998 and 2002 surveys, using the standard food pyramid framework.

	Recommended Weekly	HBS 1999-2000	SLÁN 1998	SLÁN 2002
Cereals	2100	100		
Breads	2100	2827		
Potatoes	1470	581		
Total Level 1	5670	3508	3570.49	3452.68
Fruit	1050	403	429.17	514.43
Vegetables	1680	1387	787.78	846.65
Total Level 2	2730	1790	1216.95	1361.08
Cheese	770	398		
Yoghurt	420	228		
Total Level 3	1190	626	1413.65*	1355.83*
Meat/Poultry	2100	3723		
Fish	1400	191		
Total Level 4	3500	3914	2423.12	2275.98
Soft Drinks	980	2468	216.65**	220.71**
Chocolate	1750	6500	2106.09***	1887.9***

*SLÁN nutrient analysis classifies all dairy products (including dairy desserts and spreads) together (excludes milk)

**SLÁN Drinks category not comparable to HBS

***SLÁN category includes sweets, cakes and snacks

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