Trends in food availability in MALTA – the DAFNE V project

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Introduction

The DAFNE V project provided Malta with the opportunity to use the Household Budget Surveys (HBS) that are carried out at regular time intervals by the National Statistical Office (NSO). HBS can prove a useful tool for providing information on the dietary habits of the Maltese population, by tracing food preferences within households. The use of HBS, as opposed to National Food Balance Sheets (FBS), has the added advantage of providing information on the food distribution among socio-economic groups. Malta's participation in the DAFNE project also allowed monitoring time trends in Malta's food availability, as well as comparisons with data collected in other European countries. Malta joined the DAFNE V project in 2003 and data from the 1994, 1995 and 2000 HBSs were analysed.

The data on the dietary habits of the Maltese population are limited and comparisons have traditionally been based on food supply data from the national FBS, corrected by the Food and Agriculture Organisation (FAO) to take into account food consumed by tourists as Malta hosts a large number of visitors. (Bellizzi, 1993). More recently, in 2002, the first national health and lifestyle survey the '*First Health Interview Survey'* was undertaken by the local Department of Health Information (Department of Health Information, Malta 2003). This survey, however, collected limited information on the dietary habits of the Maltese population for a particular point in time, and does not offer any continuous comparable time trend data of food habits of the Maltese people.

In this report a summary of the analysis of the Maltese HBS data is presented as it was undertaken in the context of the DAFNE V project. Furthermore, this report attempts to describe trends in household food availability and socio-demographic disparities in food habits from 1994 to 2000.

Material and Methods

Systematic random sampling was used to select the participating households within the different localities. Household, the sample unit, refers to a group of people sharing the same income and expenditure. Each survey was conducted over a period of 52 weeks among households in Malta and Gozo. Individuals living in institutional households were excluded from the study sample.

Data were collected through a main open-ended questionnaire administered by trained interviewers (face-to-face interviews) and a diary on household consumption kept by household heads over a 3-week period. Response rates were 91%, 91% and 48% for 1994, 1995 and 2000 respectively and data were weighted to obtain country representative samples. The reason for this substantial difference in response rates is that in 1994 and 1995 non-respondents were substituted with another household, while in 2000 this was not the case. Survey data for 2000 has been weighted accordingly to compensate for non-response. The raw data for 2,715 households in 1994, 2,748 households in 1995 and 2,586 households in 2000 were sent to the DAFNE coordinating centre in Athens.

To comply with the overall aims and objectives of the DAFNE project, the Maltese HBS expenditure data for these 3 survey years were converted to daily, individual food 'quantities', through the application of annual average retail prices per unit weight, which were made available from the Retail Price Index Unit at the NSO. Information on the socio-demographic characteristics of the household members was also collected. In accordance to the DAFNE methods, four characteristics are used to describe food availability by socio-demographic determinants: locality (HBS classification according to NUTS[1] 3 level), education (HBS classification according to ISCED[1]), occupation (HBS classification according to ISCO[1] 1 scale for 1994 and 1995 and ISCO[1] 2 scale for 2000) and household composition. Food codes were harmonised according to the DAFNE Food Classification Scheme. In cases where information on the contribution of specific food items grouped together in aggregated codes was needed, percentage contribution was

[1]*NUTS: Nomenclature des Unités Territoriales Statistiques*

ISCED: International standard classification of education

ISCO: International standard classification of occupations

estimated either on the basis of data retrieved from adjusted FBS or it was defined ad hoc by a panel of nutritionists.

To allow comparisons with the other countries of the DAFNE network, socio-demographic characteristics were classified in the following groups:

Locality of the residence classified under:

- urban
- rural

Educational attainment of the household head classified in the following three categories:

- Illiterate/Elementary education
- Secondary education
- Higher education

Occupation of the household head classified under five categories:

- Manual
- Non-manual
- Retired
- Unemployed
- Other (e.g. students, housewives, invalid persons)

Household composition categorized in 8 types:

- Households with one adult member
- Households with two adult members
- Households with one adult member and children (lone parents)
- Households with two adult members and children
- Households with adult and elderly members
- Households with children, adult and elderly members
- Households with one elderly member
- Households with two elderly members

Results

Trends in mean food availability between 1994 and 2000

The mean daily food availability of 14 main food groups in 1994, 1995 and 2000 is presented in figure 1. On average, milk products and cereals appear to dominate the diet of the Maltese people. Over the six year period under study, a considerable increase was observed in the availability of cereals, milk products, fish, vegetables, fruits, fruit and vegetable juices and a marginal increase in the mean, daily availability of pulses and meat. Considerable decrease was, however, observed for alcoholic beverages and potatoes. The average availability of nuts and added lipids remained relatively stable during the studied period.

Mean availability of food groups according to socio-demographic characteristics

1. Availability by education of the household head

Households of elementary education reported higher daily availability values for all groups, with the exception of nuts and juices (fruit and vegetable), whose availability was higher among households of higher education (Table 1).

2. Availability by occupation of the household head

Households of retired heads had the highest mean availability of almost all food groups for all three survey years. Households of manual workers consistently reported higher mean daily availability of fruit and vegetable juices and higher mean daily availability of milk and milk products in 2000 (Table 2). In Figure 2, the daily availability of selected food groups in manual and non manual households is presented by survey year.

Cereals, milk products, meat, fruit and vegetables are the predominant food groups in the daily diet, with potatoes closely following. Comparisons between households of different types of households defined according to the occupation of the household head showed that the:

a) Mean daily availability of fish, nuts, fruit and vegetables was higher among non-manual households, but lower for cereals and potatoes. The differences however in the daily fruit and vegetable availability in manual and non-manual households observed in mid 1990s, appear to have levelled out in 2000 (table 2).

b) Mean daily availability of milk was higher among ‘non-manual’ households in 1994 and 1995, but lower in 2000.
c) There were relatively no differences between ‘manual’ and ‘non-manual’ households for meat availability between 1994 and 1995, but lower meat availability among ‘non-manual’ households was noted in 2000.
d) In 2000, the mean daily availability of added lipids decreased among retired households, but increased among manual ones
e) Mean availability of sugar and sugar products was lower among non-manual households in mid 1990s, but higher in 2000.
f) A sharp decrease in the household availability of alcoholic beverages in 2000 in both manual and non-manual households.

3. Availability of selected food groups by locality

The classification used for locality was limited to rural and urban areas due to the geographical size of Malta and Gozo. No particular patterns of food availability by locality were noted for 1994 and 1995. In 2000 households of urban areas recorded slightly higher availability of most food groups as compared to rural, except for milk products and alcoholic beverages (table 3).

4. Availability of food groups by household composition in 2000

‘Single-adult’ households reported higher daily availability for all the food groups as compared to households of ‘two-adult’ members (figure 3). ‘Single-elderly’ households had higher daily availability of all food groups with the exception of alcoholic beverages and nuts, when compared to two-elderly households (figure 4).

Discussion

Trends and patterns observed for the mean food availability from 1994 to 2000

The comparison of results derived from the 1994 and 2000 HBS data point towards a general increase in the daily availability of most food groups, with this increase being substantial in the case of milk and products,

cereals and products, fruit and vegetable juices, fruits and vegetables (Figure 1). A decrease was however observed for alcoholic beverages and potatoes. Among the factors explaining the observed changes, particularly in relation to cereals, fruits and vegetables, fish, fruit and vegetable juices, one could identify: a) an increase in the variation of food stuffs available, b) an increase in the national production of most commodities (National Statistics Office, 2004), c) the 'all year round' availability of previously seasonal food items and d) the action plans of the Health Promotion Department to promote the value of the Mediterranean diet together with the 'five-a-day' campaign to consume at least five portions of fruits and vegetables daily, implemented at the end of the nineties.

The DAFNE results indicate that the availability of fish, seafood and products within the Maltese households increased in 2000 and reached levels that are within the recommended daily amount (40-60g per day), as suggested by the WHO in order to reduce death from coronary heart disease for high-risk population groups (WHO Technical Report Series 916, 2003). However, the availability of fish and seafood was still low possibly due to the high selling price of fish and the still remaining seasonality in its availability (increased availability during the late summer period). One of the Maltese dietary guidelines outlined in the Malta Food and Nutrition Policy, (Department of Health Malta, 1990) was *'to eat fewer* eggs' which may explain results obtained by the DAFNE HBS data which showed a reduction of mean egg availability across the three time points compared to previous figures estimated in the late 80's (Bellizzi, 1993). Skimmed milk was introduced in the local markets in 1998 and the DAFNE results for milk point towards a decrease in full fat milk in 2000, compensated by the acquisition of skimmed milk (255 ml/person/day of pasteurised milk in 1995 vs. 206 ml/person/day of pasteurised and 37 ml/person/day of skimmed milk in 2000) (Source: DafneSoft, http://www.nut.uoa.gr/dafnesoftweb/). This trend may have been the outcome of marketing and advertising strategies by local dairy companies to promote their products, together with a tendency of the Maltese population to adopt health messages, favouring the purchase of low fat dairy products.

The daily availability of potatoes within the households steadily decreased during the observed period. A similar decrease was recorded in the potato supply in Malta over the same period of time (National Statistics Office Agriculture Statistics, 2007). In addition, decreases in potato availability for roughly the same time period were also documented by some other DAFNE participating countries. In addition, the DAFNE data showed a rise in the household availability of sugar and sugar products in 2000. The overall

increased production of chocolate and sugar confectionery products in the Maltese islands (National Statistics Office, 2004) may have promoted their sales to the population.

In 2000, the mean availability of non-alcoholic beverages (1434ml/day/person) was by far larger than the amounts recorded by all the other countries for which data are available in the DAFNE databank. It is however worth noting a sharp increase in the household availability of mineral water from 79 ml/day/person in 1994 to 307 ml/day/person in 2000 (http://www.nut.uoa.gr/dafnesoftweb/).

The sharp decrease in the household availability of alcoholic beverages recorded in 2000 by the DAFNE data agrees with the decrease in adult alcohol consumption recorded in Malta in the second half of the nineties (WHO, 2004). The WHO data further showed an increasing trend in wine consumption and a decreasing one in the consumption of spirits. Under-reporting of alcoholic beverages which may have been more accentuated in 2000 together with the lack of information on the 'out of home' consumption (particularly important in the case of alcoholic beverages) may be responsible for the observed HBS trends. Unfortunately, to date, information on meals and drinks consumed 'out of home' is not available in Malta.

Trends in availability according to the four socio-demographic characteristics

The highest availability of most food groups was generally recorded among households whose heads were of elementary education (Table 1). When interpreting these results, however, it is important to take into consideration the way 'household head' was defined in the HBS methodology. The person defined as 'household head' is merely a 'reference representative' of the household, and although this is generally taken to be the breadwinner of the household, this may not always be the case.

Households of retired heads recorded the highest availability of most food groups. In general, 'retired' people may have more time to prepare meals than 'manual' and 'non-manual' workers and tend to purchase higher amounts of foods to supply for their children's families, especially since more women opt to re-enter the workforce. However, despite this fact, data showed a decrease in food availability for most food groups between 1994 and 2000; reflecting the possibility of a reduced purchasing capacity by the 'retired' persons.

The lack of food packaging for individual use in Malta, as well as the possibility that single households may afford a larger variety of foods within the same food group could explain why Maltese single-adult and

single-elderly households had the highest availability of all food groups compared to their two-member households.

Urban households were observed to have the highest food availability for most food groups. However, the results reflect only purchased food and do not include any household availability of family produced food products, due to the applied methodology. In particular, although contributions from own production are systematically recorded in the national HBS, the maltese Statistical Office did not collect this information as the contribution from own production was considered as negligible. To address this limitation, the use of 'regions' rather than 'urban/rural' type of classification might have provided a more clear picture.

Other limitations of the Maltese HBS data is that recordings were done as expenditures and therefore factors reflecting price per unit weight were retrieved from the National Statistics Office (Retail Price Index, 1994, 1995 and 2000). These factors were used to convert money expenditures to their respective quantities. During this process, some food codes were found for which prices could not be made available. In such cases imputed factors were used.

Despite certain methodological limitations and weaknesses, data derived from the DAFNE databank supplied information on the Maltese food habits for the second half of the nineties and it further allowed some evaluation of the country's situation compared to other European countries for the same time period.

Further recommendations include, firstly, that the HBS surveys should be on-going so as to monitor the dietary trends over the years. Secondly, it would be preferred if the country's National Statistical Office would substitute their data collection from 'food expenditures' to 'food quantities' as to minimise errors in estimating mean food availabilities.

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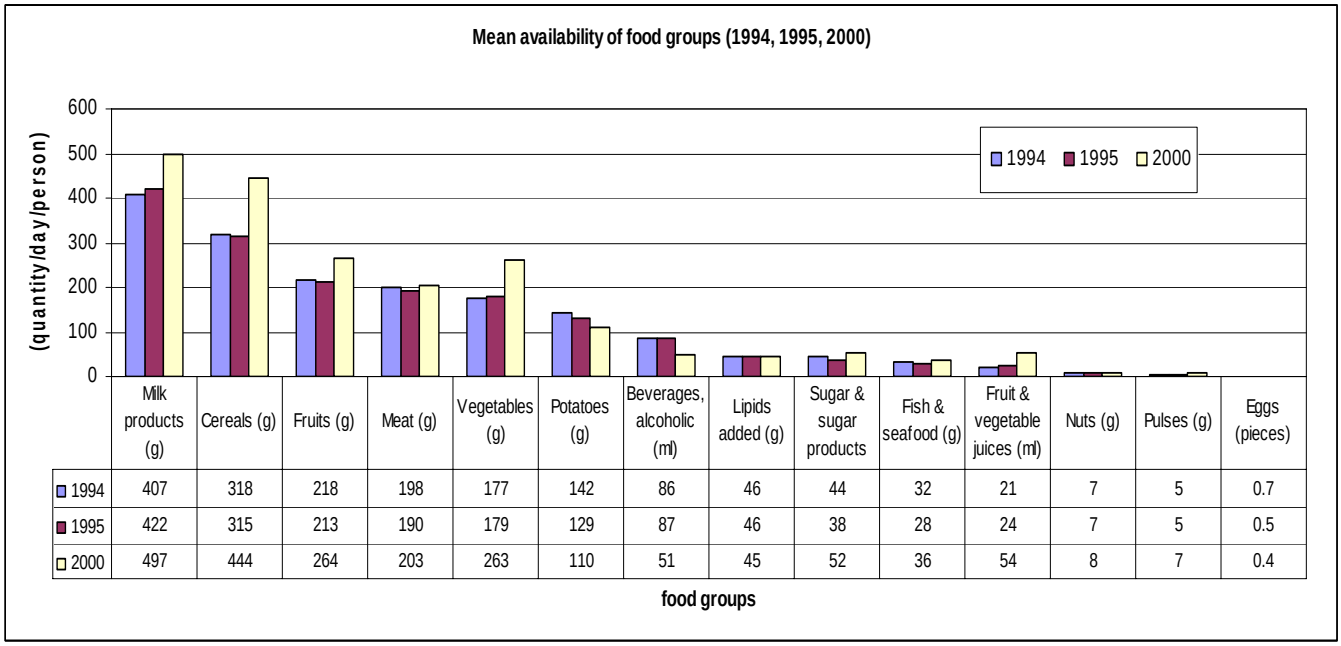
Figure 1: Mean Food Availability of 14 Main Food Groups in 1994, 1995 and 2000 in Malta (quantity/person/day).



	Milk products (g)	Cereals (g)	Fruits (g)	Meat (g)	Vegetables (g)	Potatoes (g)	Beverages, alcoholic (ml)	Lipids added (g)	Sugar & sugar products	Fish & seafood (g)	Fruit & vegetable juices (ml)	Nuts (g)	Pulses (g)	Eggs (pieces)
1994	407	318	218	198	177	142	86	46	44	32	21	7	5	0.7
1995	422	315	213	190	179	129	87	46	38	28	24	7	5	0.5
2000	497	444	264	203	263	110	51	45	52	36	54	8	7	0.4

Table 1:Mean food availability in Malta, by educational level of the household head and by survey year (quantity/day/person)

Food groups (quantity/day/person)	1994			1995			2000		
	Illiterate/ elementary	Secondary	Higher	Illiterate/ elementary	Secondary	Higher	Illiterate/ elementary	Secondary	Higher
Eggs (pieces)	**0.71**	0.72	0.48	**0.72**	0.52	0.41	**0.56**	0.39	0.27
Potatoes (g)	**163**	154	106	**191**	130	103	**158**	109	84
Pulses (g)	**6.12**	5.99	2.71	**9.40**	5.31	5.77	**8.65**	6.94	6.69
Nuts (g)	5.46	7.49	**8.73**	4.95	**7.54**	6.94	5.20	7.94	**9.08**
Cereals (g)	**409**	342	287	**384**	315	293	**1064**	395	358
Milk products (g)	**502**	409	439	415	422	**425**	483	**505**	425
Meat (g)	**247**	211	191	**264**	189	176	**243**	203	173
Vegetables (g)	**271**	188	171	**247**	177	185	**349**	256	253
Fish & seafood (g)	**35**	35	31	**39**	28	35	**44**	35	42
Fruits (g)	**301**	227	231	**264**	211	217	**333**	259	253
Lipids added (g)	**59**	50	41	**56**	46	40	**58**	44	40
Beverages, alcoholic (ml)	**117**	96	74	**122**	86	87	**60**	50	51
Beverages non-alcoholic (ml)	n/a	n/a	n/a	n/a	n/a	n/a	**1981**	1402	1249
Sugar & sugar products (g)	**50**	44	37	**52**	38	32	**62**	51	48
Fruit & vegetable juices (ml)	7.76	19	**35**	10	24	**28**	47	54	**62**

Source: The DAFNE databank

Table 2:Mean availability of food groups by occupation in 1994, 1995 and 2000

Food groups (quantity/day/ person)	1994			1995			2000		
	Manual	**Non-Manual**	**Retired**	**Manual**	**Non-Manual**	**Retired**	**Manual**	**Non-Manual**	**Retired**
Eggs (pieces)	0.62	0.61	**0.90**	0.51	0.45	**0.71**	0.37	0.32	**0.52**
Potatoes (g)	138	126	**207**	119	114	**185**	104	86	**155**
Pulses (g)	4.64	4.48	**8.13**	4.06	4.93	**8.81**	6.11	6.02	**11**
Nuts (g)	6.54	7.84	**8.04**	6.39	7.12	**10**	6.03	7.86	**12**
Cereals (g)	306	295	**409**	301	287	**413**	380	357	**704**
Milk products (g)	367	402	**502**	377	407	**532**	**549**	444	500
Meat (g)	186	188	**253**	178	175	**249**	197	182	**248**
Vegetables (g)	146	162	**287**	138	162	**290**	219	221	**410**
Fish & seafood (g)	27	30	**48**	22	27	**43**	31	34	**50**
Fruits (g)	191	205	**315**	186	191	**315**	232	239	**368**
Lipids added (g)	43	42	**65**	41	40	**66**	38	40	**65**
Beverages, alcoholic (ml)	85	76	**124**	84	77	**118**	51	43	**74**
Beverages non-alcoholic (ml)	n/a	n/a	n/a	n/a	n/a	n/a	1271	1321	**1886**
Sugar & sugar products (g)	44	41	**54**	39	35	**47**	45	47	**69**
Fruit & vegetable juices (ml)	18	**25**	15	20	**28**	24	**62**	55	39

Source: The DAFNE databank

Figure 2:Mean food availability of food groups by occupation in 1994, 1995 and 2000

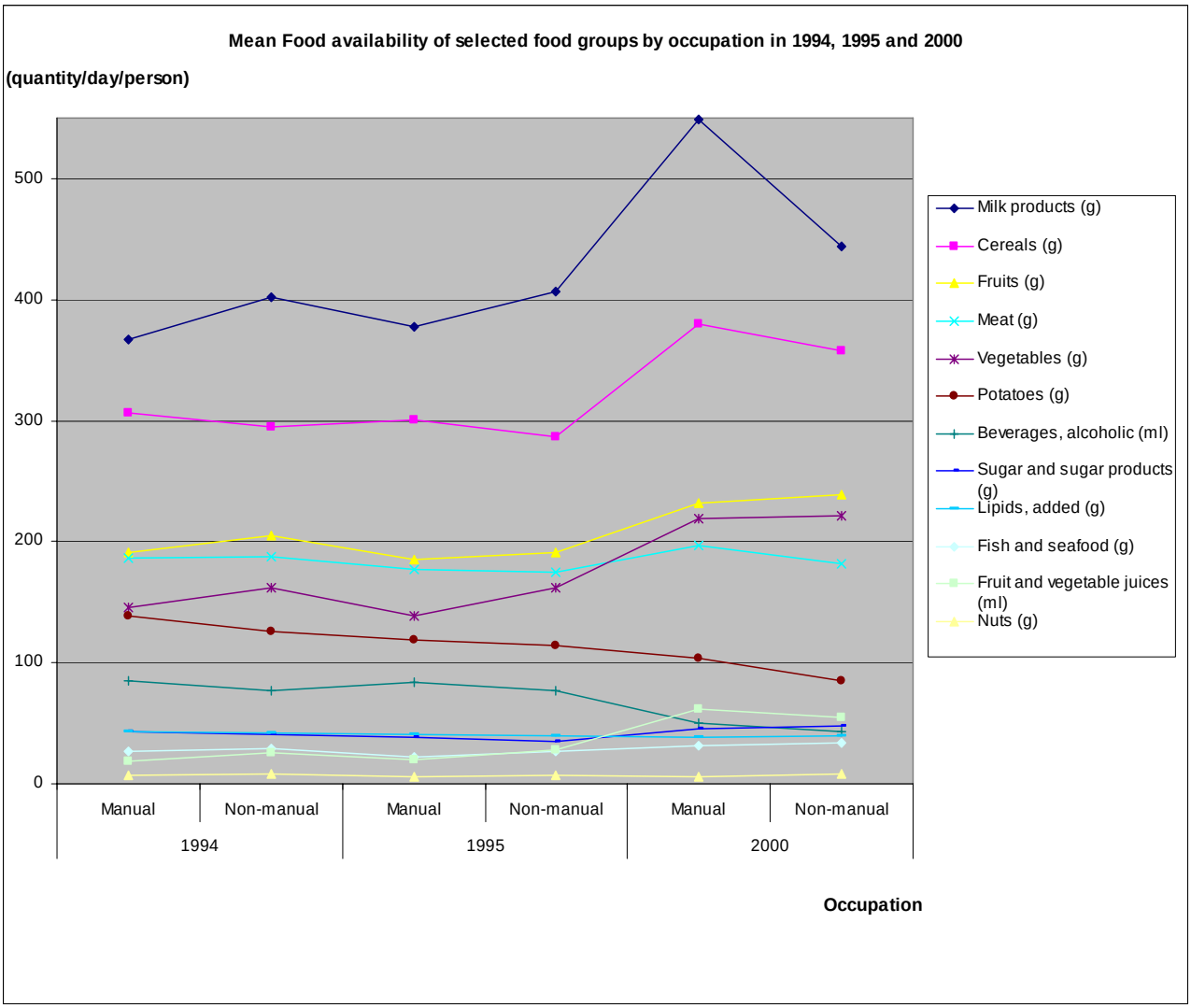


Table 3:The average availability of food groups by locality

Average food availability by locality (quantity/day/person)	2000	
	Urban	Rural
Beverages, non alcoholic (ml)	**1532**	1392
Cereals (g)	**560**	394
Milk products (g)	492	**499**
Fruits (g)	**282**	257
Vegetables (g)	**292**	251
Meat (g)	**226**	193
Potatoes (g)	**134**	100
Beverages, alcoholic (ml)	51	**51**
Fruit and vegetable juices (ml)	**66**	50
Sugar and sugar products (g)	**57**	50
Lipids, added (g)	**50**	43
Fish and seafood (g)	**38**	35
Nuts (g)	**8.85**	7.38
Pulses (g)	**8.32**	6.51
Eggs (g)	**0.45**	0.37

Source: The DAFNE databank

Figure 3:Availability of food groups between single adult and two-member adult households (2000).

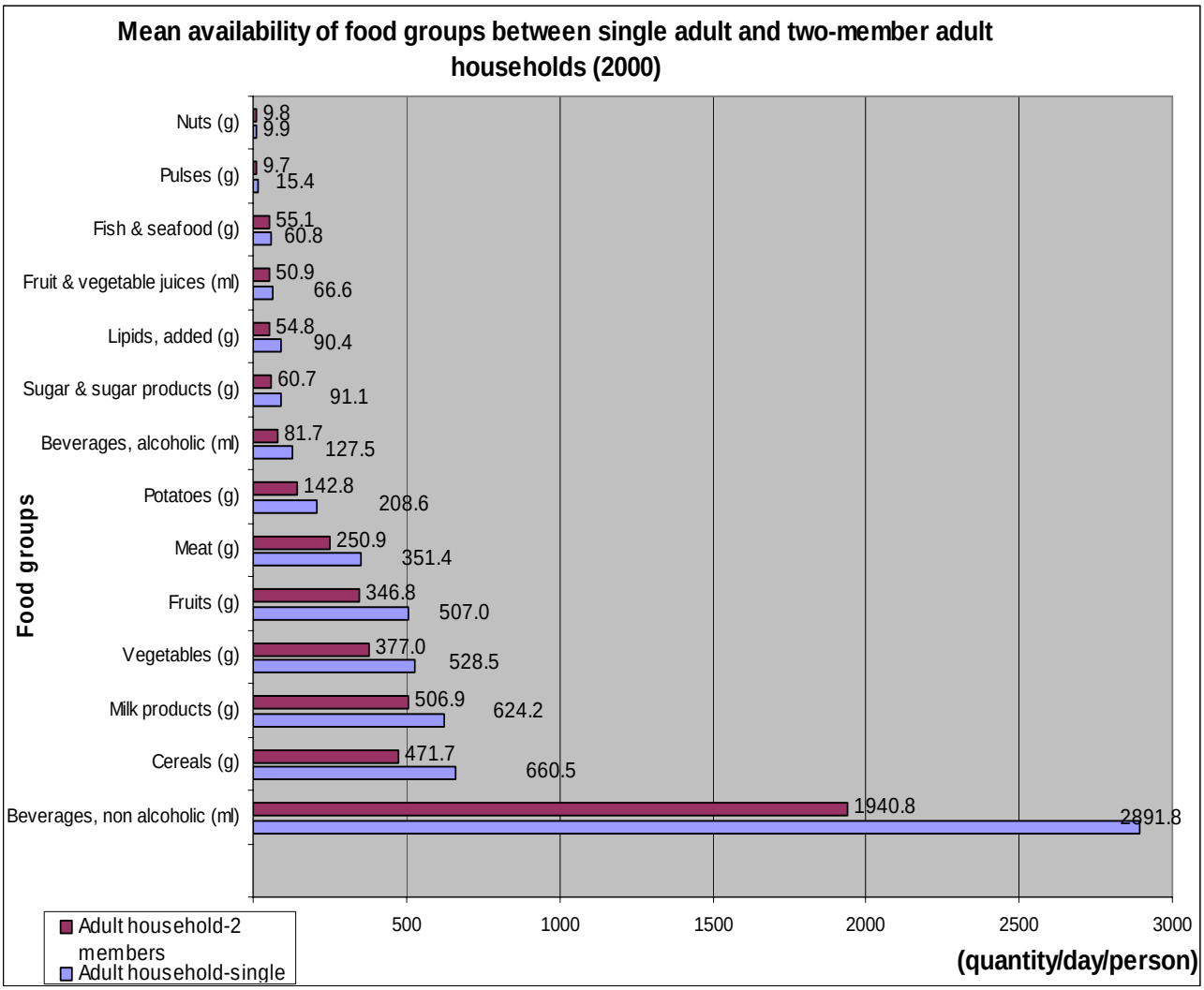


Figure 4:Mean availability of food groups between single elderly and two-member elderly households (2000).