Tegemeo Institute of Agricultural Policy and Development

Egerton University

Tegemeo Working Paper 17/2005

URBAN DOMESTIC CONSUMPTION PATTERNS FOR MEAT: TRENDS AND POLICY IMPLICATIONS

By

PAUL GAMBA
Assisted by; D. Kariuki & B. Gathigi

Tegemeo Institute of Agricultural Policy and Development, Egerton University.
P.O Box 20498 Nairobi.
Tel: (02) 2717818
Email: egerton@tegemeo.org

Support for this research has been provided by the Tegemeo Agricultural Monitoring and Policy Analysis Project (TAMPA) between Tegemeo Insitute/Egerton University and the Department of Agricultural Economics at Michigan State University. Financial support for this project is provided by the Kenya Mission of the United States Agency for International Development. Additional support is also provided by MSU through resources from the Food Security III Cooperative Agreement.

ABSTRACT

Livestock products constitute a major component of urban household diet across income groups. However, Consumer concerns receive little attention in policy formulation given the low profile such issues elicit and lack of credible consumer advocacy or lobby groups. This situation is further complicated by the absence of informative studies on urban or rural meat consumption patterns.

The study utilizes data from an urban consumption survey conducted in the Nairobi metropolitan area by Tegemeo Institute using Central Bureau of Statistics (CBS) sample frame towards the end of 2003.

This study characterizes household meat consumption in Nairobi and compares per adult equivalent consumption across income quintiles. It further examines the factors influencing urban consumption including meat prices, channels of acquisition and the traits of the household head for instance education, gender and age.

The results indicate that meat is consumed by a large proportion of the sample but essentially remains a luxury good whose consumption increases with increasing income. Middle and high-income households consume significantly large amounts of beef, chicken and eggs within the home compared to low-income households. This phenomenon reveals that health concerns especially for red meat do not necessarily influence consumption levels for both low and high-income groups. However, the consumption of chicken and eggs by high-income and educated groups appear to be responding to health concerns. Chevron (goat meat) and mutton (sheep) are hardly consumed at home. Channels of acquisition influence price and ultimately consumption patterns especially for chicken and eggs where there exists some form of product differentiation.

The foregoing implies that the potential to increase domestic consumption of meat exists within the lower income groups but can only be harnessed through affordable prices or higher incomes. As the Government focuses on increasing livestock productivity, consumer concerns should, similarly be given due consideration.

Livestock development policies must adjust to changing consumer behaviour and confront marketing inefficiencies that prevent the translation of productivity gains into consumer gains.

TABLE OF CONTENTS

INTRODUCTION

The importance of Livestock products in the diet of Kenyans is amply demonstrated by the observation that some form of livestock product often constitutes any given meal from low-income households through high-income households. The most common form of livestock products consumed by households relate to either meat or dairy products. While consumption patterns for dairy and other livestock products have recently been studied, meat has continued to receive very little attention. The dearth of studies particularly with regard to urban and rural meat consumption has translated into inadequate information for policy decisions and poorly informed debates. The absence of informative studies on meat consumption patterns has contributed to the relegation of consumer issues and concerns in the livestock policy arena. The lack of articulation of consumer concerns in livestock policy is aggravated by the weak and uncoordinated consumer organizations. The overly visible attention accorded production and producer issues in livestock policy only serves to further suppress the consumer dimension. It has however been shown that improved agricultural productivity may ultimately be reflected in increased accessibility and affordability of agricultural products to the relief of low resource households.

A recent study on livestock and livestock products production and marketing (European Union, 2003) observed that a major gap in information exists with respect to national meat consumption data. The study had to rely on estimations to discern meat consumption levels, patterns and trends in both urban and rural areas and among different socio-economic groups.

Although excessive consumption of red meat elicits health concerns, it is also recognized that it is a preferred source of proteins for most households who are particularly inclined towards meat. The study focuses on Nairobi as the major urban center and takes account of the large and expanding human population in the city that would be expected to increase demand and stimulate the influx of livestock from far-flung areas and even neighboring countries. This phenomenon occurs due to the realization that prospects for

commercialization are to be found in urban areas where the dispersed but diverse and concentrated population require value addition (processing), infrastructural and delivery services for most agricultural produce.

It has been hypothesized that increasing urbanization and population enhances demand for animal protein (Delgado et al, 1999). The demand for meat is nonetheless tempered by prices, income levels and in some cases health considerations. However, the observation for Sub-Saharan Africa negates this hypothesis since available statistics indicate that this is the only region of the world known to have registered declines in food production including livestock products while recording higher population growth rates and urbanization (FAO, 2004).

This study examines urban domestic meat consumption patterns and emerging trends among consumers with different economic backgrounds and socio-economic characteristics. The channels for acquisition of the different meat products are also examined in addition to the terminal livestock markets. It is expected that the information emanating from this study will provide useful insights on the changing urban consumption patterns, trends and the requisite policy issues.

METHODS AND DATA

Data

Tegemeo Institute in collaboration with the Central Bureau of Statistics (CBS) conducted an urban household survey covering Nairobi metropolitan area between November and December 2003. The survey involved a sample of 600 households that was drawn according to the CBS sampling frame and corresponding clusters. The survey was undertaken within the current CBS's NASSEP IV frame established using the 1999 nationwide population and housing census database. Census Enumeration Areas (EAs) were used as the primary sampling units (PSUs). The first step in developing the frame involved allocating the PSUs to the districts considered as the strata. This was followed by selection of the PSUs using probability proportional to size (PPS). Due to socio-economic diversity in the urban centers, the six major towns (Nairobi, Mombasa, Kisumu, Nakuru, Eldoret and Thika) were stratified into five income classes (strata): upper, lower-upper, middle, lower-middle and lower. Nairobi was allocated a total of 108 primary sampling units out of the 1800 units in the national frame. These were then allocated to the five strata using optimal allocation and the PSUs selected with probability proportional to size. The allocation of PSUs among the five strata is as follows:

	Strata	PSUs
1.	Upper	28
2.	Lower Upper	12
3.	Middle	16
4.	Lower Middle	36
5.	Lower	16
	Total	108

For the purpose of the household consumption survey, 30 clusters were selected in Nairobi using systematic random sampling with the following distribution:

	Strata	PSUs
1.	Upper	8
2.	Lower Upper	3
3.	Middle	5
4.	Lower Middle	10
5.	Lower	4
	Total	30

For each of the 30 clusters, 20 households were then systematically selected, giving a total of 600 households covered in the city. Because of missing information on some surveys and other sources of attrition, the final sample size for analysis was reduced to 541 households.

Weighting Procedure

The weighting of the data from the household consumption survey takes into account the sampling procedures at each stage of selection and non-responses. Weights for each cluster were calculated based on their selection probabilities. Household weights were also calculated based on their probabilities of selection. In cases where some selected households did not respond, the weights were adjusted by the following factor:

$$wi = k_i/n_i$$

where k_i = Number of selected households in the i^{th} cluster

n_i = Number of households that responded in the i^{th} cluster

Thus the overall household weights were calculated as follows

$$W_{ci} = D_{ij} * \underline{H_{si}} / H_{ri}$$

where D_{ij} is the sample weight of the j^{th} household in the i^{th} cluster.

H_{si} is the number of selected households in the i^{th} cluster

H_{ri} is the number of households that responded in the i^{th} cluster

Methods

Consumption patterns were converted to “adult equivalents” to standardize consumption units within households and take account of the different age groups and gender requirements of the specific household members. Aggregating the ensuing adult equivalent for each member of the household derives the cumulative household adult equivalent.

Table 1. Conversion Factors to Compute Adult Equivalents

	Adult Equivalence	
Age	***Males***	***Females***
Under 1 year	0.33	0.33
1 - 1.99	0.46	0.46
2 - 2.99	0.54	0.54
3 - 4.99	0.62	0.62
5 - 6.99	0.74	0.70
7 - 9.99	0.84	0.72
10 - 11.99	0.88	0.78
12 - 13.99	0.96	0.84
14 - 15.99	1.06	0.86
16 - 17.99	1.14	0.86
18 - 29.99	1.04	0.80
30 - 59.99	1.00	0.82
60 and over	0.84	0.74

As per the World Health Organization (Jayne and Argwings-Kodhek 1997).

Household income was derived as the sum of proceeds from employment and business earned by household members in the previous month. Remittances from household members not residing in the household and pension accruing to retired household members were also included. Households in the sample were ranked by income per adult equivalent and then stratified into five income quintiles to assess potential differences in consumption patterns by income.

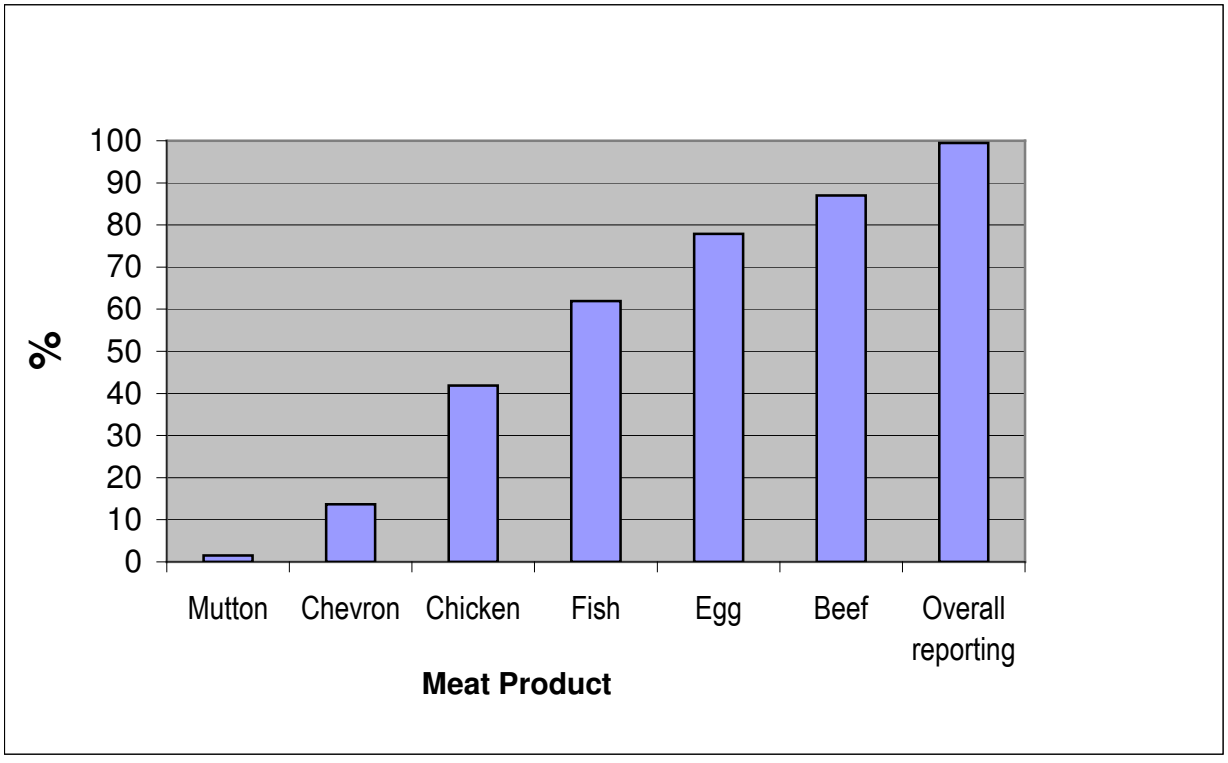
RESULTS AND DISCUSSION

Overall Meat Consumption Patterns

Meat, as initially perceived in this study included beef (cattle meat), chevron (goat meat), mutton (Sheep meat), pork, chicken, fish and eggs. Domestic meat consumption was confined to that which is consumed by households within the home and therefore excluded meats consumed outside.

Figure 1 shows that meat is a major source of animal protein and a large proportion of Nairobi households (99%) reported consumption of at least one kind of meat in any given month during the year.

Figure 1. Percentage Reporting Consumption Of Different Meat Types



Beef constitutes the largest share of reported household domestic meat consumption at 87% followed by eggs 77%, fish 62% and chicken 42%. This pattern is replicated in the

constitution of meat purchases to total household expenditure, which stands at 16% and 9.6% for beef and chicken respectively as shown in table 2 below.

The number of households recording domestic consumption of Chevron, Mutton and Pork in the sample was found to be extremely low. Our analysis indicate that chevron, mutton and pork are largely luxurious commodities and are hardly consumed at home except by a very small group of high-income households. This led to the exclusion of these meat categories from further analysis. Fish was also excluded due to aggregation problems where purchases for fish were based on numbers rather than weight as in other meat types. The core of this analysis is therefore based on the consumption of beef, chicken and eggs.

Households in Nairobi consume 15.81 Kgs, 12.42 Kgs and 7.46 Kgs of beef, chicken and eggs respectively per adult equivalent annually. This contrasts with per capita consumption that is recorded at 13.33, 10.52 and 6.1 Kgs for beef , chicken and eggs. Households on average spend about Kshs1482 on meat in a given month.

Table 2: Annual Consumption and Expenditure for Different Meats Types

Meat Type	Annual Mean per Adult Equivalent	Mean Per-Capita Consumption	Proportion of meat Expend. To Total Food Expend.
Beef	15.81	13.33	15.81
Chicken	12.42	10.52	9.59
Chevron	11.65	9.8	9.36
Mutton	7.47	6.02	5.75
Eggs	7.46	6.08	3.46
Fish	.	.	4.06

Tegemeo Urban Survey 2003

Meat Consumption and Expenditure

To facilitate critical analysis, households are compared across income groups composed of categories based on quintiles. The pattern exhibited along quintiles indicates that generally meat is a luxury good whose consumption per adult equivalent increases with increasing income levels (table 3).

Table 3: Annual Consumption of Meat (Kgs) Per Adult Equivalent by Quintiles

Quintiles	Beef	Chicken	Eggs
1	8.55	6.75	4.30
2	13.98	8.87	6.83
3	18.27	11.81	9.07
4	22.00	13.82	7.83
5	23.77	17.97	10.68
Overall	15.81	12.42	7.46

Tegemeo Urban Survey 2003

Households with the lowest income consume 8.55 kgs that is only 30% of the total amount of beef consumed by the higher income groups (24 Kgs) per adult equivalent. The wide disparity in consumption between the lowest and highest income quintiles also obtains for chicken (7 to 18 Kgs) but reduces for eggs (4.3 to 10.68 Kgs).

The per capita consumption for meat types exhibits a similar pattern as the per adult equivalent consumption and is shown in table 3(a) below.

Table 3(a): Mean Per capita consumption of Meat products (Kgs) by quintile

	Beef	Chicken	Eggs
1	7.15	5.53	3.55
2	11.89	7.61	5.77
3	13.96	8.90	6.16
4	19.77	12.07	6.83
5	21.19	15.88	9.79
Total	**13.33**	**10.52**	**6.08**

Tegemeo Urban Survey 2003

In comparison to other countries, Nairobi households are consuming far much lower quantities. Leading countries such as Uruguay and Argentina consume in excess of 40 Kgs per capita (Centre for North American Studies, 1998) which is above the high income households in Nairobi. Developed countries have been reducing per capita consumption but still show significantly high amounts. The United State and Canada consume in excess of 30 Kgs per capita even with increasingly evident health slanted campaigns against red meat consumption.

Using the current Nairobi metropolitan population of three million, the per capita consumption of 13.33 Kgs translates into a monthly supply of about 1200 animals yielding 115 kgs of meat and offals each.

Table 4 shows that within the meat types, expenditure on beef constitutes the largest share at 59% for all quintiles while for chicken and eggs its 29% and 17% respectively. Expenditure on eggs between quintiles however exhibits a descending trend from 22% for the lowest income quintile to 13% for the highest income Quintile. This trend may be due to a preference for beef and chicken over eggs or an indication of the increasingly highlighted health concerns associated with the consumption of large amounts of eggs.

Table 4: Expenditure Share of Meat Type Against All Meat by Quintile

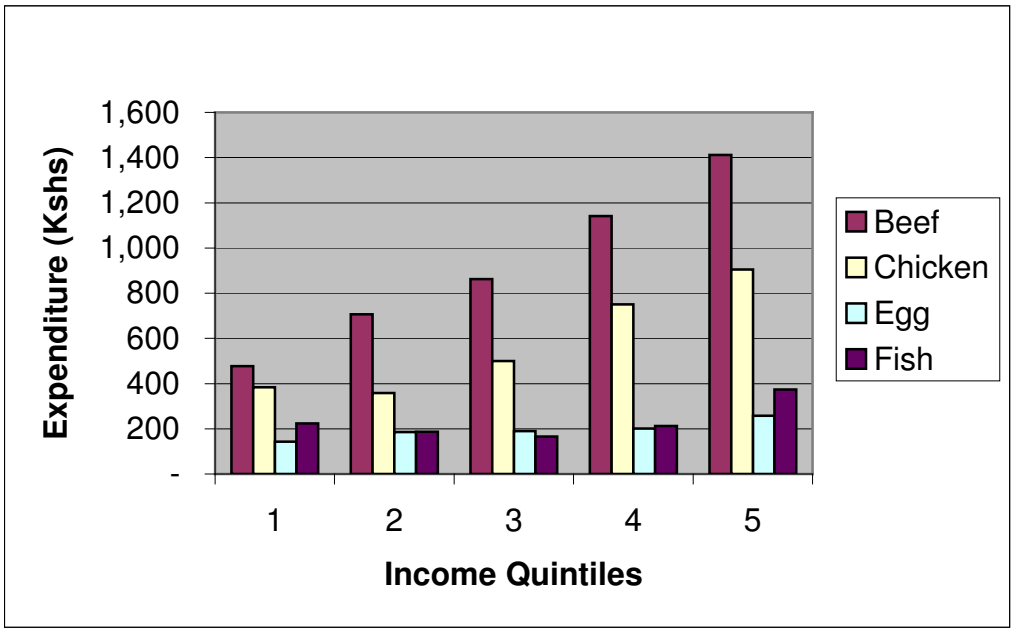
Quintiles	Beef	Chicken	Eggs
1	58.29	34.37	22.04
2	63.37	24.84	17.04
3	64.28	25.04	19.27
4	60.19	28.15	13.04
5	47.65	32.02	12.99
Overall	59.03	29.20	16.71

Tegemeo Urban Survey 2003

High-income households devote larger outlays to meat of all kinds according to the mean annual values of meat purchased. This is particularly evident for beef where on average highest income households spend Kshs 1411 compared to Kshs 476 by the lowest income quintile. This indicates that high income households spend as much three times on beef compared to the low income quintile. The same disparity in expenditure applies to the amounts spent on fish by the two extreme income groups. Expenditure on eggs by the highest income quintile is however less than double that of the lowest income quintile.as shown in figure 3 below.

The higher expenditures on all meat types by high income quintiles may also be an indicator of those groups attention to quality aspects rather than simply larger consumed amounts. This is particularly common in the case of beef and chicken.

Figure3: Monthly Expenditure (Kshs) on Meat Types by Quintiles



The prices for meat show little disparity between the income quintiles. There is a significant difference especially in respect of beef and chicken. In view of the income differences between the quintiles it is certain that beef and chicken prices are skewed against the low-income quintiles. The prevailing chicken and beef prices appear relatively high for the lower income groups (table 5). The consumption of chicken may be constrained by the indivisibility problem where chicken always sold whole and cannot therefore be obtained in smaller quantities. This is in contrast to beef and eggs that are available in much smaller quantities.

Table 5: Mean Meat Prices per Kg

Quintiles	Beef	Chicken	Eggs
1	144.91	153.48	128.35
2	143.26	150.22	87.64
3	142.30	158.80	132.49
4	147.00	159.05	95.37
5	169.88	189.57	96.02
Overall	149.07	167.94	107.71

Tegemeo Urban Survey 2003

For food security (nutritional aspects) and poverty alleviation efforts, there seems to be significant scope to be gained from more affordable beef, chicken and egg prices especially to the low income groups. This perspective has a significant lesson to the current livestock development initiatives to improve productivity and marketing in the Arid and Semi-Arid Lands (ASALs). It should be emphasized that these initiatives to improve livestock productivity and marketing can only contribute toward poverty alleviation and food security if the gains that accrue are translated into lower meat prices. This is corroborated by the small disparity in beef prices between the low and high income quintiles. Given the elastic nature of beef demand (European Union, 2003), it is apparent that a small reduction in price might just elicit a substantial increase in consumption volumes within the low income quintiles. This observation extends even further to the rural areas where the price of meat is not much different form those in urban areas despite the marked difference in income levels. The study by Kilungo and Mghenyi (2001), support the argument that the beef market in particular is capable of absorbing a decrease in price in view of the high margins that currently accrue to butchers.

The relatively uniform beef and chicken prices suggest that quality concerns do not influence purchases for the low and middle income households or that the meat products are not sufficiently differentiated on the basis of quality. This is highlighted by noting that only the highest income households pay a significantly different price for both beef and chicken in Nairobi.

The price of eggs presents an alarming situation where the poorer households pay a much higher amount (Kshs. 128) per kg compared to the more endowed households (Kshs. 96) per kg. This is mainly a reflection of volume discounts accorded to high-income groups as opposed to the low income Quintile who purchase small quantities at a time. This difference could be a result of the channel through which eggs are obtained or the nature of the eggs for instance whether it is from exotic or indigenous birds.

Common Channels for Meat

The channels from which Nairobi households purchase meat are shown in table 6 below.

Table 6: The Most Used Channels (%) By Meat Type

Location of purchase	Beef	Egg	Chicken
Large supermarket	2.77	10.00	12.33
Small supermarket	0.21	2.38	1.76
Market	.	4.29	48.02
Hawker	.	0.95	3.96
Duka / shop	0.21	67.38	3.08
Neighbor	.	0.95	3.52
Kiosk / Kibanda	3.20	13.81	7.93
Butchery	93.39	.	11.01
Restaurant	0.21	.	5.73
Other	.	0.24	2.64
Overall	100	100	100

Tegemeo Urban Survey 2003

Beef is overwhelmingly procured from butcheries (93%) with a small percentage from Kiosk / Kibanda (3%) and large Supermarkets (3%). It is apparent that despite the dominance of butcheries as a channel for beef, other outlets are beginning to emerge.

This is especially significant in view of large supermarkets, which in their initial stages did not stock perishable food items.

The local Market is the most commonly used channel for acquisition of Chicken (48%) followed by large supermarkets (12%) and butcheries (11%).

Meat Prices in Common Channels

The price of beef per kilogram is highest in large supermarkets averaging Kshs. 176 in contrast to butcheries where it is Kshs 148 (table 7).

Table 7: Mean Prices of Meat Products by Channel

Location of purchase	Beef	Egg	Chicken
Large supermarket	176	95	196
Small supermarket	.	94	137
Market	.	93	158
Hawker	.	130	158
Duka / shop	140	106	122
Neighbor	.	83	150
Kiosk / kibanda	148	93	174
Butchery	148	.	211
Restaurant	160	.	156
Other	.	71	166
Overall	149	108	168

The emphasis on quality cuts for beef in large supermarkets contributes to higher prices and is therefore less appealing to poorer households.

In most instances, butcheries offer uniform quality with limited product differentiation. Nonetheless, there is a distinct categorization ranging from a few high-class butcheries where quality beef cuts is the main specialty to low class butcheries where quality considerations are not highly rated.

The high-end butcheries charge a premium for the choice beef cuts in view of the supply sources, which are mainly well-regarded ranches. The glaring anomaly in the prices of beef in the different acquisition channels concerns consumer preferences. It is generally acknowledged that beef consumers in Nairobi prefer fresh meat to cold chain (frozen meat).

However, the outlets that provide choice beef cuts that command higher prices deal mainly in cold chain meat. Given the Nairobi households preference for fresh meat and the higher prices for choice cuts, it is expected that large supermarkets will be mostly patronized by the high income groups.

Chicken costs more in butcheries (Kshs 211) compared to large supermarkets (Kshs 196) and local markets (Kshs 157). The price differences in respect of chicken sourced from different channels reflect an aspect of product differentiation. Large supermarkets and

butcheries mainly stock exotic chicken whereas local markets stock indigenous chicken. The preference for indigenous chicken among urban households is borne out by the large proportion of urban households purchasing chicken from local markets.

Some element of value addition has been invoked in the local markets by the presence of butcheries and large supermarkets in the chicken delivery channels. Local markets nowadays offer slaughtering services to consumers except that there is some waiting time element involved. Consumers who patronize local markets prefer to select from live chicken before they are slaughtered thereby trading off the waiting time element.

Selected Proportionate Channel Use by Income

Table 8: Proportionate Channel Use By Quintile For Chicken

Quintiles	1	2	3	4	5	% Total
Large Supermarket. mkt	4.6		7.9	10.2	22.5	12.3
Small Supermarket. mkt			5.3		2.5	1.8
Duka / shop	9.1	7.1		3.4	1.3	3.1
Market	40.9	71.4	52.6	57.6	32.5	48.0
Hawker		3.6	7.9	5.1	2.5	4.0
Kiosk / kibanda	18.2		15.8	5.1	6.3	7.9
Butchery	9.1	3.6	7.9	6.8	18.8	11.0
Neighbor	4.6	3.6		3.4	5.0	3.5
Other		3.6		5.1	2.5	2.6

Tegemeo Urban Survey 2003

The Market forms the most common channel for chicken for all income quintiles. The market receives the whole range of household income groups in search of chicken with the middle-income groups forming the largest proportion. High-income quintiles frequent large supermarkets (23%) for chicken almost as much as they do butcheries (19%) that is an indication of a more diverse chicken sourcing pattern.

Egg acquisition channel disaggregated by income quintile (table 9) shows that a large proportion (>70%) of the first four-income quintiles purchase eggs from the shop /duka.

The highest income quintile divides its egg purchases between the duka /shop and large supermarkets (>36%).

Table 8: Proportionate Channel Use By Quintile For Eggs

Quintiles	1	2	3	4	5	% Total
Large supermarket	.	1.15	2.44	7.14	35.87	10
Small supermarket	1.33	1.15	2.44	2.38	4.35	2.38
Duka / shop	77.33	78.16	75.61	72.62	36.96	67.38
Market	.	6.9	4.88	3.57	5.43	4.29
Hawker	1.33	.	.	2.38	1.09	0.95
Kiosk / kibanda	20	12.64	13.41	10.71	13.04	13.81
Neighbor	.	.	1.22	.	3.26	0.95
Other	.	.	.	1.19	.	0.24

Tegemeo Urban Survey 2003

A substantial proportion of all the income quintiles (more than 10%) purchase eggs from kiosk / Kibanda, which indicates its importance as an egg outlet.

Household Characteristics Influencing Meat Consumption

The household characteristics examined in this section pertain to the head of the household. It is hypothesized that household head characteristics influences the pattern of household consumption. The household head characteristics examined are confined to age, education and gender.

Age

The households were classified into four groups according to the age of household head as follows: Less than 25 years, between 26-35 years, 36-55 years and greater than 56 years. The age groups were based on career stages.

Table 10: Mean Meat Per Adult Equivalent Consumption (Kgs/year) per Quintile by Age Category

	Quintile	Overall mean	Less than 25 years	26 - 35 yrs	36 - 55 yrs	Greater than 56 yrs
Beef	1	8.55	6.64	9.51	8.74	7.73
	2	13.98	20.68	13.76	11.70	5.37
	3	18.27	19.69	18.36	10.92	16.87
	4	22.00	21.37	20.86	24.52	17.92
	5	23.77	43.14	32.45	17.93	18.40
Chicken	1	6.75	8.50	9.13	5.51	5.27
	2	8.87	8.63	9.75	6.55	.
	3	11.81	14.50	10.92	7.98	6.23
	4	13.82	11.80	14.87	12.14	18.73
	5	17.97	15.32	24.98	16.46	14.60
Eggs	1	4.30	3.22	5.08	3.76	2.57
	2	6.83	7.77	6.42	7.22	1.82
	3	9.07	16.21	6.48	3.81	9.20
	4	7.83	9.89	8.21	6.47	6.81
	5	10.68	7.09	17.95	8.15	8.18

Tegemeo Urban Survey 2003

From table 10 above, the general pattern where meat consumption increases with income is maintained between the income quintiles within the specified age categories. The eldest households (>56 yrs) appear to consume less beef, chicken or eggs within all income quintiles except for the fourth quintile. This may be an indication of increasing health concerns by the older households or a shift of priorities during investment periods particularly observing that consumption first rises then falls with.

The 26-35 years old age category consumes the highest amounts of beef, chicken an eggs of all the age groups.

Education

Education years were used to obtain three levels of education i.e. 0 through 8 years, 9 through 14 years and lastly colleges and universities. The mean per adult equivalent consumption of each education category for beef, chicken and eggs within income quintiles is indicated in table 10.

Table 11: Mean Per Adult Equivalent Meat Consumption (Kgs/year) per Quintile by Education Category

	Quintile	Overall mean	0 thru 8 years	9 thru 14 years	Colleges and universities
Beef	1	8.55	8.26	9.31	6.44
	2	13.98	16.41	11.55	21.27
	3	18.27	16.35	16.61	27.57
	4	22.00	29.03	20.25	19.51
	5	23.77	23.62	24.99	23.19
Chicken	1	6.75	6.49	7.13	11.54
	2	8.87	9.22	8.58	9.68
	3	11.81	9.37	12.00	12.44
	4	13.82	16.88	12.25	14.01
	5	17.97	25.13	14.10	19.17
Eggs	1	6.47	7.82	4.31	6.23
	2	7.30	7.74	5.69	14.74
	3	8.31	5.83	8.58	11.12
	4	8.60	7.33	7.67	9.63
	5	9.41	25.55	8.76	8.66

Tegemeo Urban Survey 2003

While the consumption of meat along quintiles increases with increasing income within education categories, it is noteworthy that the consumption of eggs presents a deviation from the norm. The colleges/universities educated category shows a declining egg consumption pattern along quintiles. It is apparent that the highly educated cut down the consumption of eggs irrespective of income levels.

The colleges/universities egg consumption declines by more than 40% from 14.74 Kgs in the second income quintile to 8.66 Kgs in the highest quintile. Whether this is a direct response to health issues remain unclear

Gender

Table 12 shows that the mean consumption of meat types by gender of the household is Not significantly different, however it is observed that male headed households seem to consume slightly more chicken compared to the female headed households. In contrast, the consumption of eggs by female-headed households appears to be higher than for male-headed households.

Table 12: Mean Consumption of Meat Products by Gender (Kgs)

Gender	Beef	Chicken	Eggs
Male	4.03	4.62	2.22
Female	4.05	4.17	2.82
Group Total	4.03	4.53	2.31

Tegemeo Urban Survey 2003

CONCLUSION AND POLICY IMPLICATIONS

Most households in Nairobi consume meat irrespective of income levels. The consumption pattern for meat shows that it is essentially a luxury good whose consumption increases with increasing income. It is shown that health issues are often overridden by the influence of income in terms of consumption patterns particularly for beef. The only health concern that takes effect involves decreasing consumption of eggs by the college and university educated households. Beef is the dominant meat type consumed at home by Nairobi households followed by chicken and eggs. Chevron and mutton is hardly consumed at home and does not feature in most household diets. Meat per capita consumption levels are quite low compared to other countries which is evidence of the significant scope in increased consumption for all income groups.

There are distinctly different channels for specific meat types with beef being obtained from butcheries, chicken mostly from markets and eggs from shops. Whereas traders in markets have started adjusting to consumer demands especially in view of value addition and divisibility, the markets are not equipped to handle services such as slaughter of chickens and consequently concerns about hygiene arise. This implies that civic authorities should take account of the developments in consumer behavior and provide the facilities that support these developments.

The varying prices noted for the different channels of acquisition for meat reveal elements of product differentiation. It is nonetheless significant that the price of beef in particular showed very little variation across income groups in Nairobi. An almost uniform price for a good is reflective of a heavier burden borne by low income groups due to its relatively larger share in total food expenditure.

The results indicate that the potential for increased consumption of meat lies in the low income groups. For instance, it is observed that high income groups consume more than three times as much beef as the low income households. The current initiatives targeting improved productivity and marketing of livestock and livestock products can only be useful if the gains obtained translate into affordable meat consumer prices. At the moment it would seem the major concern of the livestock industry only revolves around increasing producer without the corresponding realization that the consumer is a key factor in attempts to increase livestock productivity.

BIBLIOGRAPHY

Aklilu, Y. (2003). An Audit of the Livestock marketing status in Kenya, Ethiopia and Sudan. Issues and Proposed measures. CAPE Unit, AU/IBAR. Nairobi.

Barrett, C.B. Chabari, F, D.V, Little, P.D, and Coppock, D.L. (2003). Livestock Pricing in the Northern Kenya Rangelands. *Journal of African Economies* 1:127-155.

Center For North American Studies (1998). An overview of World markets for North American Cattle and Beef. Department of Agricultural Economics, The Texas A and M University.

Delgado C.; Rosegrant, M; Steinfeld H.; Ehui, S. and Courbois C. (1999). Livestock to 2020: The Next Food Revolution. An IFPRI, FAO and ILRI Environment Discussion Paper, 72pp.

European Union (EU). (2003). Livestock and Livestock Products production and Marketing Systems in Kenya. Draft Report, Agrisystems Limited.

Mugunieri, G.L., Omiti J.M (2004). Strategies for improving the contribution of livestock sector to food security and increased incomes: The case of Red Meat. IPAR Discussion Paper Series, No. 042/2004. IPAR, Nairobi, 45pp.

Jayne, T.S. and G. Argwings-Kodhek, 1997, Consumer Response to Maize Market Liberalization in Urban Kenya." *Food Policy,* v. 22, no. 5 (Oct.): 447-458.

Kilungo J.K. and Mghenyi E. (2001). Factors Limiting Beef Productivity and Marketing in Kenya. Working Paper, Tegemeo Institute, Egerton University.