



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Consumption Patterns of Urban Punjab of Pakistan: Evidence from HIES 2013-14**

**Waqar Akram, PhD**

Associate Professor

Department of Business Administration, Sukkur IBA

[waqar.akram@iba-suk.edu.pk](mailto:waqar.akram@iba-suk.edu.pk)

**Shida Henneberry, PhD**

Regent Professor

Oklahoma State University, USA

***Selected Paper prepared for presentation at the  
2016 Agricultural & Applied Economics Association Annual Meeting, Boston, MA, July 31 –  
August 2, 2016***

*Copyright 2016 by authors. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*

# **Consumption Patterns of Urban Punjab of Pakistan: Evidence from HIES 2013-14**

**Waqar Akram, PhD**

Associate Professor

Department of Business Administration, Sukkur IBA

[waqar.akram@iba-suk.edu.pk](mailto:waqar.akram@iba-suk.edu.pk)

**Shida Henneberry, PhD**

Regent Professor

Oklahoma State University, USA

## **Abstract**

We have analyzed the food consumption patterns and then estimated consumption elasticities for Urban Punjab. For this purpose we used LA-AIDS model specification by forming ten food groups using HIES 2013-14 data and applied seemingly unrelated regression (SUR). We found that, people of Pakistan with the passage of time consuming less amount of wheat and wheat flour, it may be due to the shifting towards fast foods and other substitutes such as rice, corn, and backing flour. Our study suggest that, urbanization and exclusion of the livestock from the main cities may be a threat to food security. Appropriate measures must be taken by the Government to ensure the food availability and to keep the prices smooth.

**Keywords:** Urban food consumption, LA-AIDS, expenditure elasticities

**JEL classification:** D12

## **Introduction and Background**

In the 21<sup>st</sup> century the world population is changing its character, which was historically predominantly rural. Currently (2015) the rural and urban population account for equal shares of total population and it is expected that by 2050, two thirds of world population would reside in urban areas. A similar pattern has been observed in Pakistan. At the time of independence in 1947, only 15.4 percent of population was residing in urban areas; while in 1988, this statistic increased to 32 percent and at the present time (2014-15), it is 40 percent (GoP 2015). Since 2005, the urban population is increasing at the rate of 3 percent and it is expected that in 2025, urban population would reach 50 percent. These demographic changes has an effect on the dietary needs of the urban dwellers.

It is expected that population growth, rural- urban migration, and low levels of wages to adversely affect the consumers' buying power. With the decline in per-capita incomes, individuals are expected to consume more cereals in order to fulfill their energy needs; while the consumption of milk and dairy products are expected to decline. For example, from 2007-2014 in urban Punjab, Pakistan, consumption of wheat and wheat flour increased from 6.8 kg/pc/month to 7.9 kg/pc/month. Whereas the consumption of milk has been reduced from 7.60 liter/pc/month to 3.74 liter/pc/month from 2007-2014. (GoP 2014). On overall basis, food expenditures account for 54 percent of total household expenditures; while the rural and urban food expenditure share is 54 and 46 percent respectively. The food expenditures are dominated by wheat and dairy products; these two food items are account for 46 percent of total food expenditures. In this situation, any adverse change in price or income would have serious implication for urban food security in Pakistan.

There is a point interest to know separately food consumption pattern in rural and urban areas. The urban households adopt the sedentary life style due to which the calories consumption need is low as compared to rural households (Clark, Huberman, and Lindert 1995). And with the change in the income level the composition of the food consumption also differ between rural and urban dwellers (Huang and David. 1993); the urban households preferred more fast food or street-vendor rice because the in urban areas, mostly both men and women are the income earners and have less time for preparing food. (Senauer, Sahn, and Alderman 1986; Reardon, 1993; Kennedy and Reardon, 1994). The urban households are not self –sufficient in food availability, they are dependent upon the rural households production of food (Wu 1999).

With the availability of large cross sectional data, food consumption patterns were studied by Siddiqui, 1982; Burki 1997 and Haq et.al 2008, 2011. A recent attempt was made by Malik et.al 2014 to study the effect of increase in the food prices in 2007 by controlling poverty status and seasonal effects. These studies have ignored the demographics of the household while estimating the income and price elasticities. Prior to this Malik and Sarwar 1993 attempted to study the consumption patterns with effect of remittances.

The overall objective of the study is to analyses urban consumer food demand in Urban Punjab. It is the most populated province of Pakistan, almost half of the population of Pakistan lives in Punjab province (91 million) and predominantly consist of urban population. Though Punjab province is major food supplier in the country, but also have high demand of food because 50 percent of total population is residing in this province. With the rapid rate of urbanization and low income that results in low access to food, statics shows it increased from 35 percent to 53 percent from 2003 to 2009, and following same trend. The study of the Punjab province will help in understanding the demand for food in urban Pakistan. This will help to devise the policies, programs to cater the future needs of the households for essential food items.

The specific objective of this study is measure the impact of economic (price and per capita Household income) and demographics (age, food consumption habits, income distribution, gender) on household food demand using a complete demand system. In the first step, we investigate the food consumption patterns in urban Punjab and in second step we estimate the consumption elasticities. With the help of these estimates, we draw policy implications for present and future demand for food of urban dwellers. It provides the insight to the policy makers to formulate the policies for the food security in urban areas and marketers use the information to make their strategies to provide the food on the shelves of the grocery stores.

## Method and Data

There are different methods to use food demand system. Here a Linear Approximate Almost Ideal Demand System (LA-AIDS) [Deaton and Muellbauer (1980a: 1980b)] for the estimation of expenditure elasticities. A cost function (PIGLOG) introduced by Muellbauer (1976) used to specify the budget share equations for each food group. Then this budget share group used as dependent variables and prices in log form and real expenditure as independent variables. Later to test the desirable properties this specification is assumed. Budget share in each commodity group is presented as in the form of LA-AIDS demand equation.

$$w_i = \alpha_i + \sum_{j=1}^n \gamma_{ij} + \ln(p_j) + \beta_i \left( \frac{x}{p} \right) + e \quad (1)$$

Above equation (1) represents:

$n$ = number of goods,

$w_i$ = budget share of good  $i$ ,

$p_j$ = price of good  $j$ ,

$x$  = total expenditure on food,

$P$ = price index approximated by the Stone price index

$= (\ln(p) = \sum_j w_j \ln(P_j))$  and  $a_i, \gamma_{ij}$ , and  $B_i$  are assumed as parameters.

Pollock and Wales (1981) introduced another equation to account the socio-economic characteristics, age cohorts, food consumption habits, and income distribution as:

$$\alpha_i = a_i^* + \sum_j \delta_{ij} z_j \quad (2)$$

Where  $(z_j)$  represents demographic variables (age, age groups, family size) and  $(\delta_{ij})$  is the vector of parameters. We can get from first two equations;

$$w_i = a_i^* + \sum_{j=1}^n \gamma_{ij} + \ln(p_j) + \beta_i \left( \frac{x}{p} \right) + \sum_{j=1}^n \delta_{ij} z_j + e_i \quad (3)$$

This is the final equation we used for ten food groups to analyses consumption patterns. Demand function restriction are applied to test adding up; Homogeneity and symmetry. That is;

Adding-up:

$$\sum_i^n a_i^* = 1, \quad \sum_i^n \gamma_{ij} = 0, \quad \sum_i^n B_i = 0 \quad \forall \text{all } i \quad (4)$$

Homogeneity:

$$\sum_i^n \gamma_{ij} = 0, \quad \forall j \quad (5)$$

Symmetry:

$$\gamma_{ij} = \gamma_{ji} \quad (6)$$

To overcome the simultaneity of equations we used seemingly unrelated regression (SUR) introduced by Zellner (1963). For significance a delta method used. Later on restriction are applied to on expenditure function to test the property of additivity and homogeneity. In this study we used ten food groups means ten expenditure equation and for theoretical restriction, we omit the last group which is called as other food items. However, this process does not effect the system of equations and expected results.

## Data

A national representative data named household integrated Economic survey (HIES) used to analyses the consumption patterns and then consumption elasticities. It covers four provinces of Pakistan and comprised of 17,989 household but we concise to only Urban-Punjab.

To analyze the complete food demand system, we divide the household consumed foods into following categories: wheat and wheat products; rice varieties; other cereals; milk and milk related products; pulses; fresh fruits and vegetables; meat, poultry and fish; cooking oil; sugar, honey and sugar preparations; and other foods (condiments and spices (whole and powder), tea, etc.).

LA-AIDS estimates systems of equations, we introduce budget share of each food group as an equation and then other equations of each group introduced separately. Then we run the system of equation simultaneously and then estimate the expenditure elasticities for each group. To make all these group a detailed information is provided in HIES 2013-14 including budget shares and quantity consumed of each item. By this we can estimate the expenditure elasticities and then apply the restrictions.

## Results and Discussion

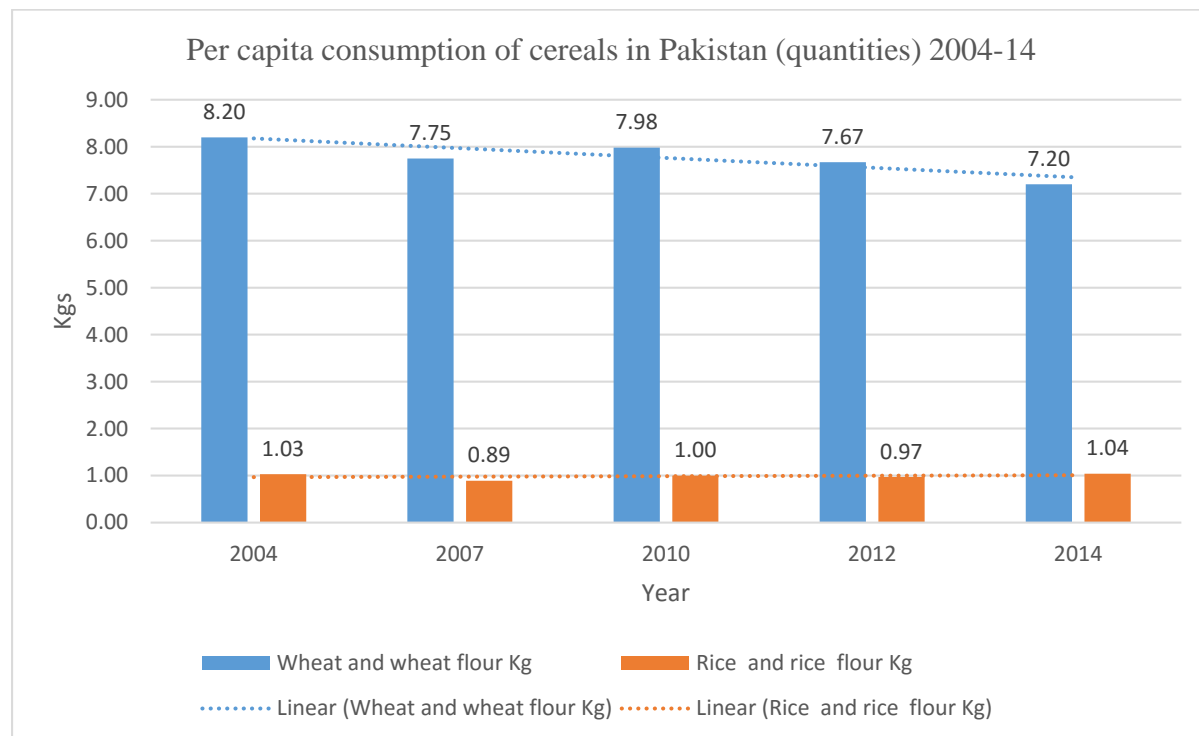


Figure 1 Per capita consumption of cereals in Pakistan

As shown in figure 1, per capita consumption of wheat and wheat flour is decreasing with the passage of time. In 2004, the monthly average consumption Pakistani people for wheat and wheat flour was 8.20 kg while in 2014 it fell to 7.20 kg. Surprisingly, with the increase in population the consumption of wheat has been decreased over the time, it might be due to the spending pattern of the inhabitants; they are spending on substitutes. Looking at the consumption of the rice and rice flour, it is shown in the figure that there is not a significant change in the consumption of rice. In 2004, people of Pakistan consuming almost 1.03 kg per month and in 2014 it was noted 1.04 kg.

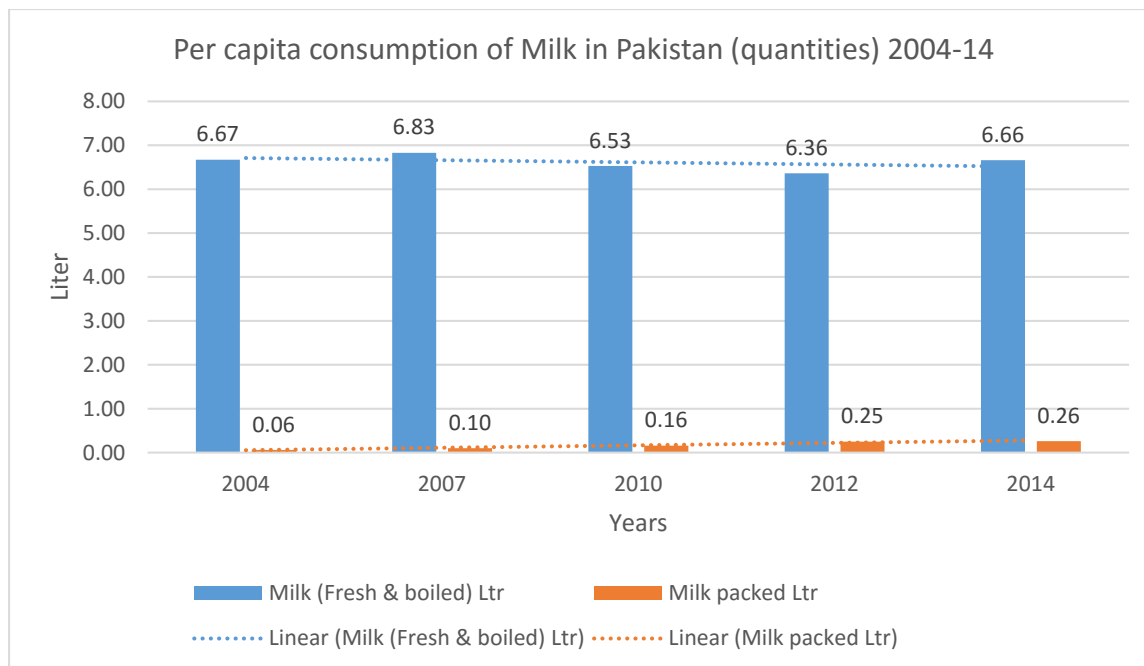


Figure 2 Per capita consumption of Milk in Pakistan

Figure 2 shows the per capita consumption of milk, surprisingly, with the passage of time the consumption of milk has been decreased. Though the reduction in consumption from 2004 to 2014 is minor but with increasing population it is noticeable. In 2004, the average monthly consumption of fresh and boiled milk of inhabitant of the country was 6.67 liter and it reduced to 6.66 liter in 2014. Whereas the average consumption of packed milk increased, in 2004 it was 0.06 liters and in 2014 it reached to 0.26 liters. Packed milk is expensive than fresh and boiled milk even that the consumption of packed milk has been increased, it may be due to exist of large animals from the cities.

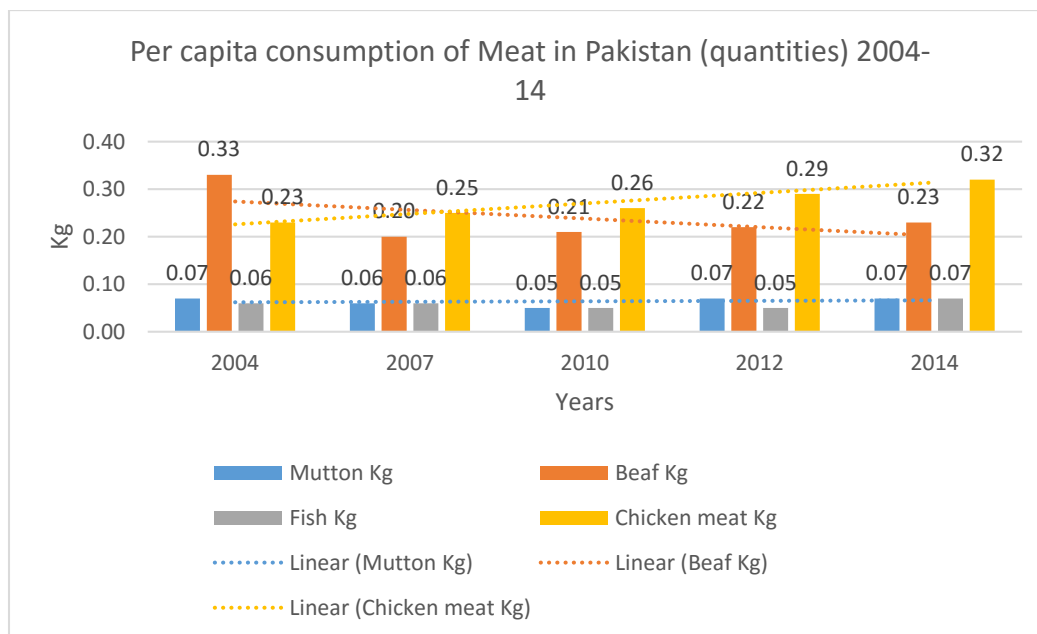


Figure 3 Per capita consumption of Meat in Pakistan

Figure 3 explains the consumption of meat in Pakistan, it shows that with the passage of time the consumption of beef reduced and in 2004 the average monthly consumption was 0.33kg while in 2014 it fell to 0.23kg. On the other hand, the consumption of chicken increased, in 2004 the monthly average consumption was 0.23kg and in 2014 reached to 0.32kg. It seems people substitute beef and chicken, there prices are also nearer to one another. In the case of mutton and fish there is not considerable change occurred, fish average monthly consumption in 2004 was 0.06kg and it reached to 0.07 kg in 2014. Mutton average monthly consumption remained same in 2004 and 2014 at 0.07kg.

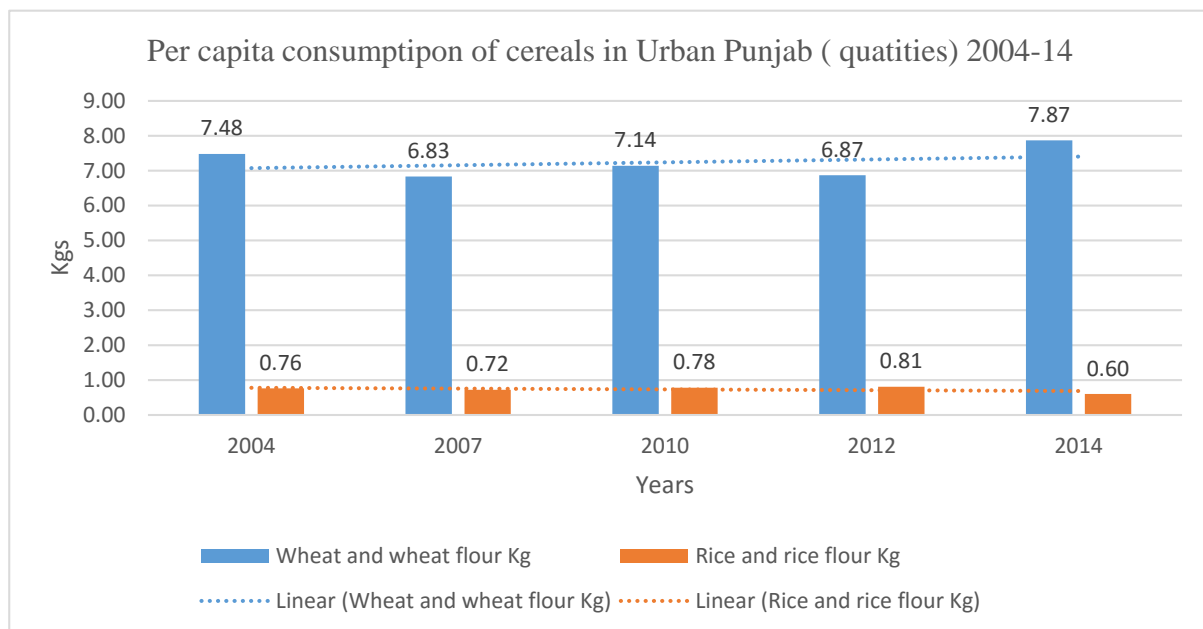


Figure 4 Per capita consumption of cereals in Punjab

Interestingly in figure 4, the average monthly consumption of wheat and wheat flour has been risen from 7.48 kg to 7.87 kg while in figure 1 the country consumption has been decreased. It shows in Punjab the preference of wheat and wheat flour has not been affected over the time. Similarly, rice and rice flour in Punjab moved opposite to country consumption, country consumption of rice and rice flour increased but in Punjab it decreased. In 2004, the average consumption of rice and rice flour was 0.76 kg and in 2014 it fell to 0.60 kg.



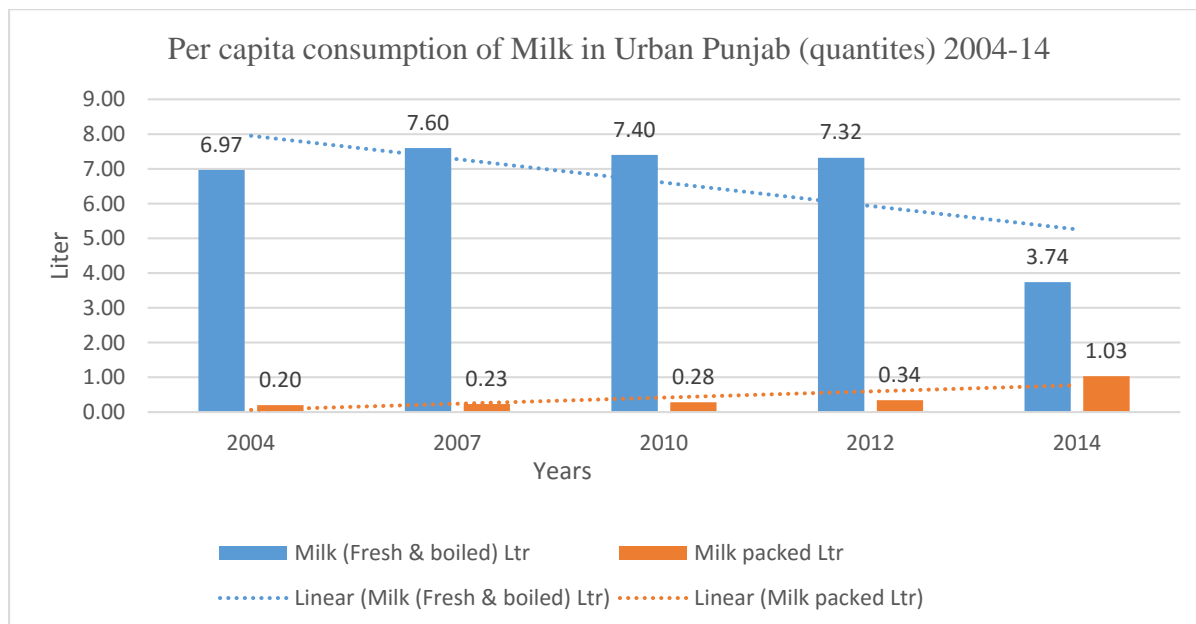


Figure 5 Per capita consumption of Milk in Punjab

Drastic reduction was noted in the consumption of fresh and boiled milk in Punjab while it was minor reduction at country level. In 2004, the consumption of fresh and boiled milk was 6.97 liters and it reduced to 3.74 liters in 2014. Other the other hand the consumption of packed milk increased from 0.20 liters to 1.03 liters. It may be due to urbanization and exist of livestock from the main cities of the Punjab.

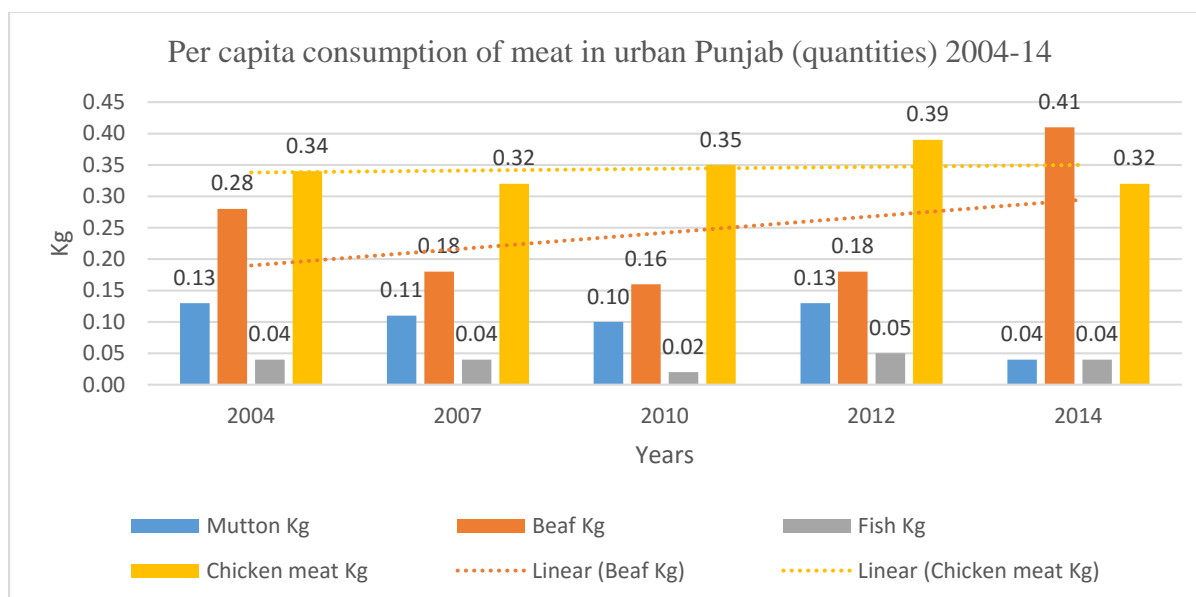


Figure 6 Per capita consumption of Meat in Punjab

The consumption trend in Punjab of meat is almost similar to the overall consumption pattern of the country. The beef consumption increased from 0.28 kg to 0.41 kg, chicken consumption decreased from 0.34 kg to 0.32 kg while mutton consumption decreased from 0.13 kg to 0.04 kg and fish consumption remained same 0.04 in 2004 and in 2014.

**Table 1: Expenditure Elasticities of Demand (2013-14)**

Food items	Cereal Type 1	Cereal Type 2	Cereal Type 3	Pulses	Fresh Fruits & Vegetables	Milk Products	Animal Flesh	Edible Oil	Sugar	Other
Urban areas of Punjab	0.711	1.03	1.028	0.612	0.966	1.487	0.971	0.664	1.07	0.785
Punjab Province	0.691	0.902	0.833	0.705	0.903	1.683	0.841	0.608	0.93	0.724

Table 1 shows the expenditures elasticities of different food groups of urban and overall province. The results of LA-AIDS model suggested that overall the expenditures elasticities are significant and positive which means all the food items are normal. In urban areas the expenditures elasticities of rice, other cereals, and sugar are greater than one while at province level they are close to one but less than unity. It implies that these groups are more responsive to expenditures and these are luxurious items in urban areas. While the expenditure elasticity of dairy is greater than unity both in urban and in province suggesting that smaller change in expenditure will cause more than unity in demand of dairy products at urban and province level. On the other hand, the expenditures elasticities of cooking oil, wheat, and pulses are positive but less than unity which means these groups are irresponsive to the expenditures in other words these groups are near to necessities. People in urban areas or in overall the province have to purchase wheat, pulses, and cooking oil up to a specific level, no matter their income have major fluctuations.

**Table 2: Own compensated and uncompensated price elasticities of urban Punjab (2013-14)**

Food items	Cereal Type 1	Cereal Type 2	Cereal Type 3	Pulses	Fresh Fruits & Vegetables	Milk Products	Animal Flesh	Edible Oil	Sugar	Other
Compensated	-0.128	-0.655	-0.321	-0.311	-0.323	-0.513	-0.124	-0.145	-0.493	-0.329
Uncompensated	-0.245	-0.685	-0.337	-0.318	-0.449	-0.887	-0.237	-0.207	-0.609	-0.394

Table 2 shows that almost all the commodities are compensated inelastic ranges from -0.12 to -0.65. Whereas uncompensated elasticities are a bit higher and dairy products were noted near to unity. Cereal type 1 which is wheat and wheat flour was highly inelastic which means it was a necessary good. Similarly, edible oil and meat were noted inelastic commodities for urban inhabitants of the province Punjab.

**Table 3: LA-AIDS Estimation**

Food items	Cereal Type 1	Cereal Type 2	Cereal Type 3	Pulses	Fresh Fruits & Vegetables	Milk Products	Animal Flesh	Edible Oil	Sugar	Other
<b>Cereal Group Wheat, Rice and other cereals</b>										
Cereal Type 1	.1124*** (.0029)	.0058*** (.0013)	.0004 (.0006)	-.0019** (.0009)	-.0310*** (.0017)	-.0311*** (.0018)	-.0247*** (.0019)	-.0039** (.0015)	-.0095*** (.0018)	-.0097*** (.0013)
Cereal Type 2	-0.0058*** (0.0013)	0.0197*** (0.001)	-0.0015*** (0.0004)	-0.0028*** (0.0006)	0.0048*** (0.0011)	-0.0003 (0.0007)	-0.0016** (0.0007)	-0.0057*** (0.0009)	0.0043*** (0.0009)	-0.0022*** (0.0007)
Cereal Type 3	0.0004 (0.0006)	-0.0020*** (0.0008)	-0.0021*** (0.0004)	0.0009*** (0.0003)	0.0027*** (0.0005)	0.0006 (0.0002)	-0.0022*** (0.0008)	-0.0008 (0.0003)	0.0012*** (0.0004)	0.0017*** (0.0008)
Pulses price	-0.0019** (0.0009)	0.0027*** (0.0001)	0.0008*** (0.0003)	0.0206*** (0.0004)	0.0028*** (0.0003)	0.0010 (0.0001)	-0.0050*** (0.0004)	-0.0056*** (0.0005)	0.0037*** (0.0006)	-0.0014*** (0.0007)
<b>Milk and Milk Products Groups</b>										
Price of Dairy	-.0311*** (0.0018)	-.0004 (0.0008)	.0003 (0.0003)	.0008 (0.0005)	-.0063*** (0.0014)	.0848*** (0.0024)	-.0095*** (0.0018)	-.0210*** (0.0001)	-.0158*** (0.0014)	-.0047*** (0.0008)
<b>Edible Oil group</b>										
Price of Cooking Oil	-0.0039** (0.0015)	-0.0057*** (0.0009)	-0.0006 (0.0004)	-0.0055*** (0.0004)	-0.0168*** (0.0007)	-0.0203*** (0.0007)	-0.0167*** (0.0011)	0.0807*** (0.0022)	-0.0083*** (0.0008)	-0.0057*** (0.0009)
<b>Fleshy Products</b>										
Meat price	-0.0247*** (0.0019)	-0.0019** (0.0003)	-0.0023*** (0.0004)	-0.0048*** (0.0005)	-0.0038*** (0.0007)	-0.0097*** (0.0012)	0.0753*** (0.0011)	-0.0164*** (0.0004)	-0.0047*** (0.0011)	-0.0097*** (0.0005)
<b>Sweetener Group</b>										
Price of sugar	-.0095*** (0.0018)	.0043*** (0.0009)	.0017*** (0.0008)	-.0038*** (0.0005)	.0037*** (0.0008)	-.0157*** (0.0014)	-.0048*** (0.0011)	-.0088*** (0.0012)	.0363*** (0.0014)	-.0038*** (0.0009)
<b>Fresh Fruits and Vegetables</b>										
Fruits and veg. price	-0.0310*** (0.0017)	-0.0047*** (0.0005)	0.0028*** (0.0001)	0.0027*** (0.0002)	0.0651*** (0.0013)	-0.0063*** (0.0018)	-0.0037*** (0.0011)	-0.0167*** (0.0012)	0.0034*** (0.0008)	-0.0073*** (0.0005)
<b>Remaining items food group (tea and</b>										
Remaining group price	-0.0097*** (0.0013)	-0.0022*** (0.0007)	0.0013*** (0.0004)	-0.0016*** (0.0003)	-0.0077*** (0.0002)	-0.0045*** (0.0009)	-0.0093*** (0.0005)	-0.0056*** (0.0009)	-0.0038*** (0.0009)	0.0413*** (0.0003)
<b>Total expenditures on food</b>										
expenditures on food	-0.0415*** (0.0014)	-0.0037*** (0.0011)	-0.0007 (0.0005)	-0.0083*** (0.0001)	-0.0117*** (0.0014)	0.1541*** (0.0031)	0.0187*** (0.0015)	0.0427*** (0.0012)	-0.0073*** (0.0017)	-0.0207*** (0.0009)

We have found that most of the coefficients are significant and have signs according to theory. Expenditures are responsive to the price change. Wheat coefficient is positive and significant, shows that with the increase of price of wheat, this has perverse effect. It shows that wheat is a staple food in Urban Punjab. It is also major part of the food consumption. Similarly, although rice is a cereal but people respond negatively means substitute other cereals if increase in the price of rice.

## **Conclusion:**

Consumption pattern of the people of Pakistan were analyzed in this article, and elasticities in province Punjab were calculated, our analysis have some specific implications. We found that, people of Pakistan with the passage of time consuming less amount of wheat and wheat flour, it may be due to the shifting towards fast foods and other substitutes such as rice, corn, and backing flour. Similarly, with the passage of time the consumption of fresh and boiled milk is reducing, it may be due to the urbanization and exclusion of livestock from the cities. In urban areas the expenditures elasticities of rice, other cereals, and sugar are greater than one while at province level they are close to one but less than unity. Similarly, the expenditure elasticity of dairy is greater than unity both in urban and in province suggesting that dairy products are luxurious items for whole province. On the other hand, the expenditures elasticities of cooking oil, wheat, and pulses are positive but less than unity which means these groups are irresponsive to the expenditures in other words these groups are near to necessities. Wheat usually considered as a staple food in Pakistan this is why the expenditure elasticity of the wheat and wheat flour was noted less than one. Our study suggest that, urbanization and exclusion of the livestock from the main cities may be a threat to food security. Appropriate measures must be taken by the Government to ensure the food availability and to keep the prices smooth.

## **References**

- Burki, A. A. (1997). Estimating Consumer Preferences for Food, Using Time Series Data of Pakistan. *The Pakistan Development Review* 36:2 131-153
- Burney, N. A., and A. H. Khan (1991) Household Consumption Patterns in Pakistan: An Urban-Rural Comparison Using Micro Data. *The Pakistan Development Review* 30:2 145–171.
- Clark, Gregory, Michael Huberman, and Peter H. Lindert. “A British Food Puzzle, 1770-1850,” *Eco- nomic History Review* Vol. 48, No. 2, May 1995, pp. 215-37.
- Deaton, A. and L. Muellbauer. 1980a. An Almost Ideal Demand System. *American Economics Review*, 70:312-26
- Deaton, A. and L. Muellbauer. 1980b. *Economics and consumer behavior*. Cambridge: Cambridge, University Press, UK
- Farooq, Umar, Trevor Young, and Muhammad Iqbal (1999). “An Investigation into the Farm Households Consumption Patterns in Punjab, Pakistan”. *The Pakistan Development Review*. 38: 3 (Autumn 1999) pp. 293–305
- Government of Pakistan (2014-15) *Economic Survey 2014-15*. Ministry of Finance. Islamabad.

Government of Pakistan (various Issues). Household Integrated Economic Survey. Pakistan. Bureau of Statistics, Islamabad. <http://www.pbs.gov.pk/content/pakistan-social-and-living-standards-measurement>.

Haq, Zahoor, Hina Nazli, Karl Meilke, Muhammad Ishaq, Amjad Khattak, Arshad H. Hashmi And Fasih Ur Rehman (2011). "Food Demand Patterns in Pakistani Punjab". Sarhad Journal of Agriculture. Vol.27, No.2.

Haq, Zahoor., Hina. Nazli, and Karl. Meilke. 2008. Implications of high food prices for poverty in Pakistan. *Agricultural Economics*. 39: 477

Huang, Jikun, and Cristina C. David. "Demand for Cereal Grains in Asia: The Effect of Urbanization," *Agricultural Economics* Vol. 8, 1993, pp.107-124.

Kennedy, Eileen and Thomas Reardon. "Shift to Non-traditional Grains in the Diets of East and West Africa: Role of Women's Opportunity Cost of Time," *Food Policy* Vol. 1, 1994, pp. 45-56.

Malik Sohail J, Nazli H and Whitney E. 2014. Food Consumption Patterns and Implications for Poverty Reduction in Pakistan. Paper submitted to the 30th GM & Conference of Pakistan Society of Development Economists, Islamabad, Pakistan, December 4-6, 2014

Malik, Sohail J. and Nadeem Sarwar (1993). Some Tests for Differences in Consumption Patterns: The Impact of Remittances Using Household Income and Expenditure Survey 1987-1988". *The Pakistan Development Review*. 32:4, 699-711.

Muellbauer, J. (1976). Community preferences and the representative consumer. *Econometrica*, 44(5), 525-543.

Pollack, A. and Wales, J. 1981. Estimation of Complete Demand Systems from Household Budget Data: The Linear and Quadratic Expenditure Systems. *The American Economic Review*, 68:348-359

Reardon, Thomas. "Cereals Demand in the Sahel and Potential Impacts of Regional Cereals Protection, *World Developments* Vol. 21, No.1, 1993, pp.17-35.

Senauer, Ben, David Sahn, and Harold Alderman. "The Effect of the Value of Time on Food Consumption Patterns in Developing Countries: Evidence from Sri Lanka," *American Journal of Agricultural Economics* Vol. 68, 1986, pp. 920-927.

Shamim, Farkhanda and Etzaz Ahmad, 2007. Understanding household consumption patterns in Pakistan. *Journal of Retailing and Consumer Services* 14 (2007) 150–164.

Siddiqui, Rehana (1982). An Analysis of Consumption Patterns in Pakistan. *The Pakistan Development Review* 21:4, 275-296

The World Bank. *World Development Indicators*, 2000.

Wu, Yanrui. *China's Consumer Revolution: The Emerging Patterns of Wealth and Expenditure*, Edward Elgar Publishing, Inc., Massachusetts, USA, 1999.

Zellner, A. 1963. Estimators of seemingly unrelated regression: Some exact finite sample results. *J. Am. Stat. Ass.* 58, 977-992.