



PAKISTAN
Strategy Support Program


INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
A member of the CGIAR Consortium

# Food security, consumption, poverty and nutrition in Pakistan: What do we know and what can we do about it?

**Sohail J. Malik**
**Hina Nazli**
**Asma Shahzad**
**Amina Mehmood**

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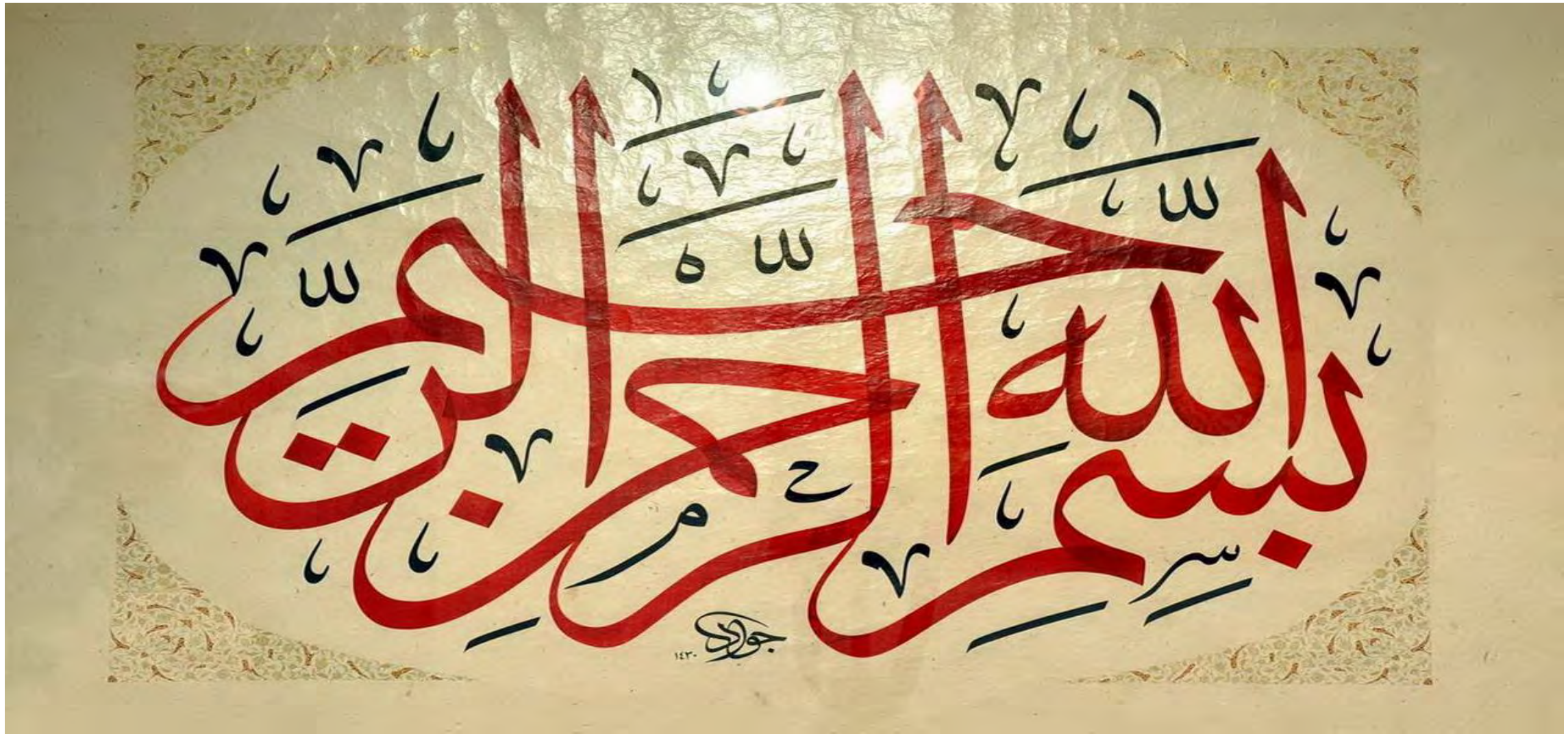
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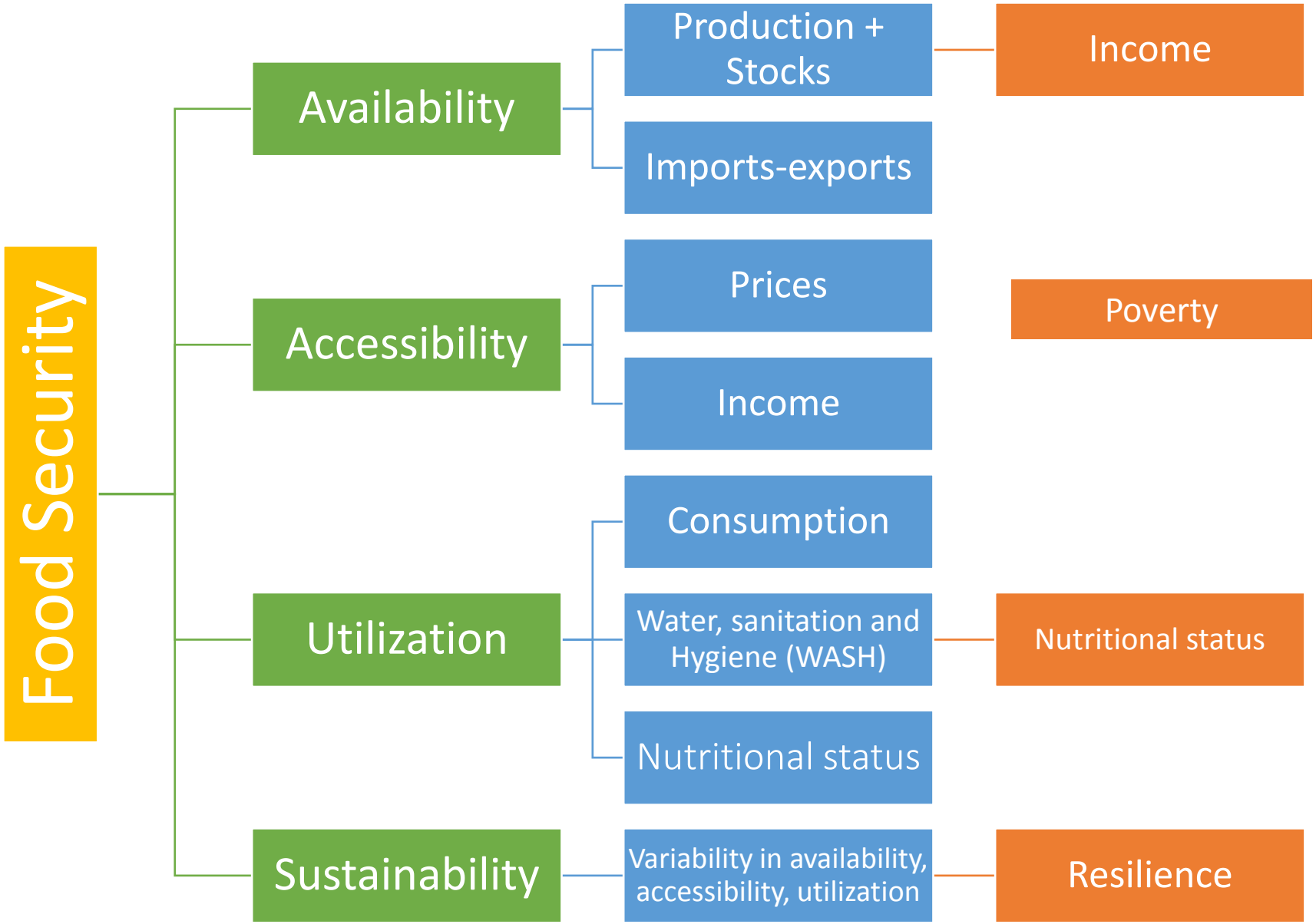
# Food Security, Consumption, and Nutrition

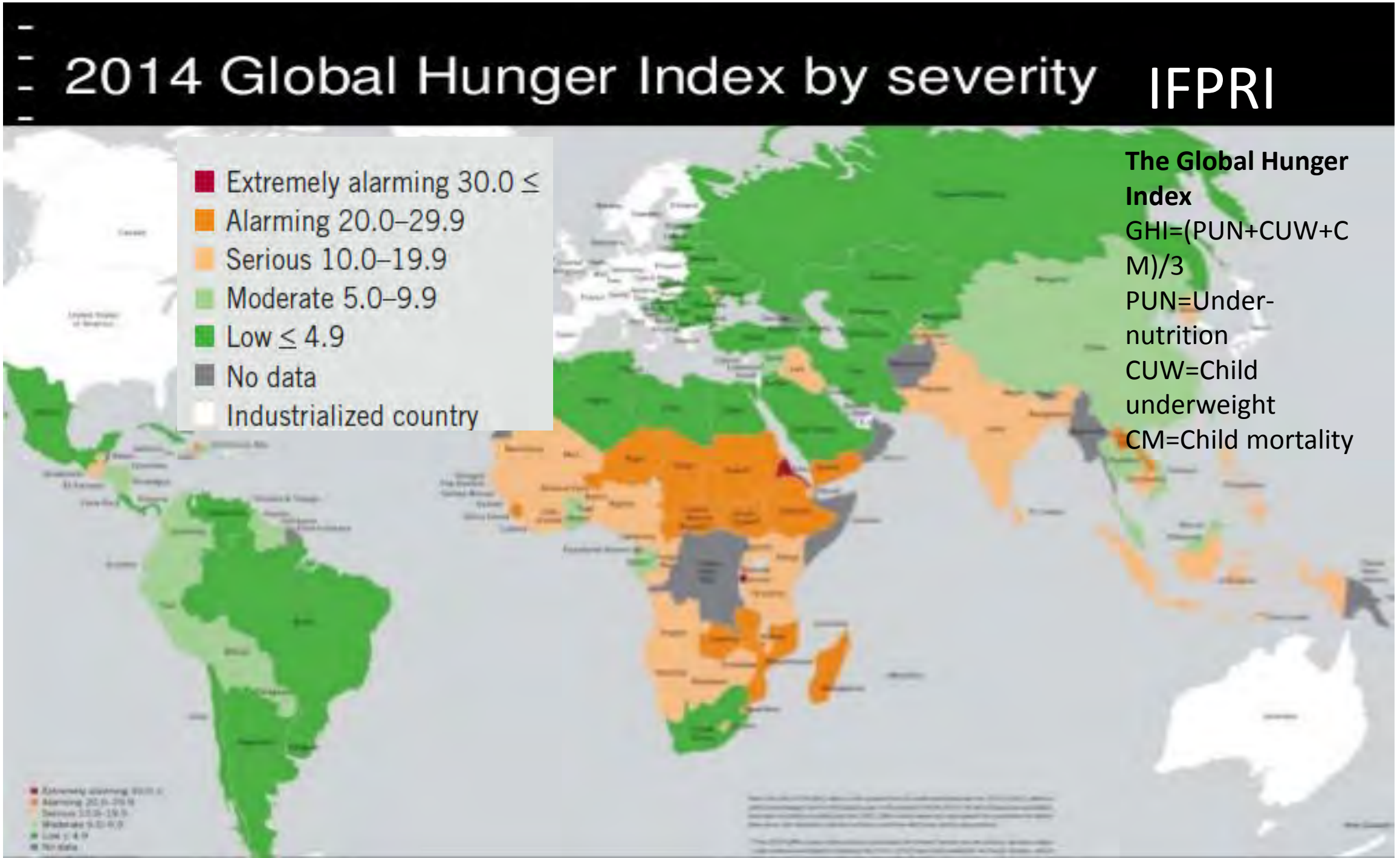


# World Hunger Facts – What do we know?

- About **842 million people** in the world do not eat enough to be healthy (FAO, 2013)
- Most of the world's undernourished people are still to be found in **Southern Asia**, closely followed by sub-Saharan Africa and Eastern Asia. (FAO, 2013)
- A **third of all deaths** in children under the age of five in developing countries are linked to under-nutrition. (IGME, 2011)
- In the developing world, **one child in four** is stunted, meaning that their physical and mental growth is impaired because of inadequate nutrition. (The Lancet, 2013)

# 2014 Global Hunger Index by severity

IFPRI




**The Global Hunger Index**

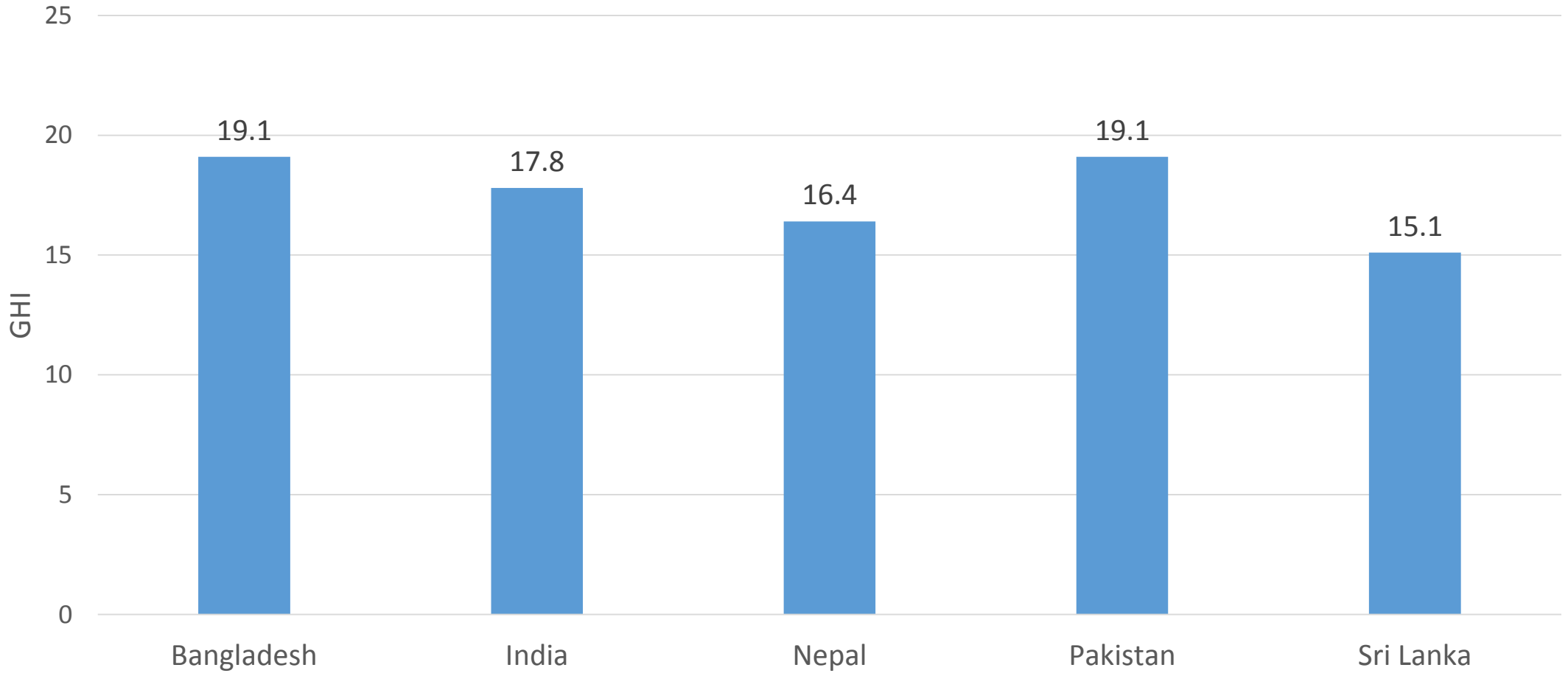
GHI=(PUN+CUW+CM)/3

PUN=Under-nutrition

CUW=Child underweight

CM=Child mortality

# Global Hunger Index – Pakistan Borderline *Alarming* in 2014

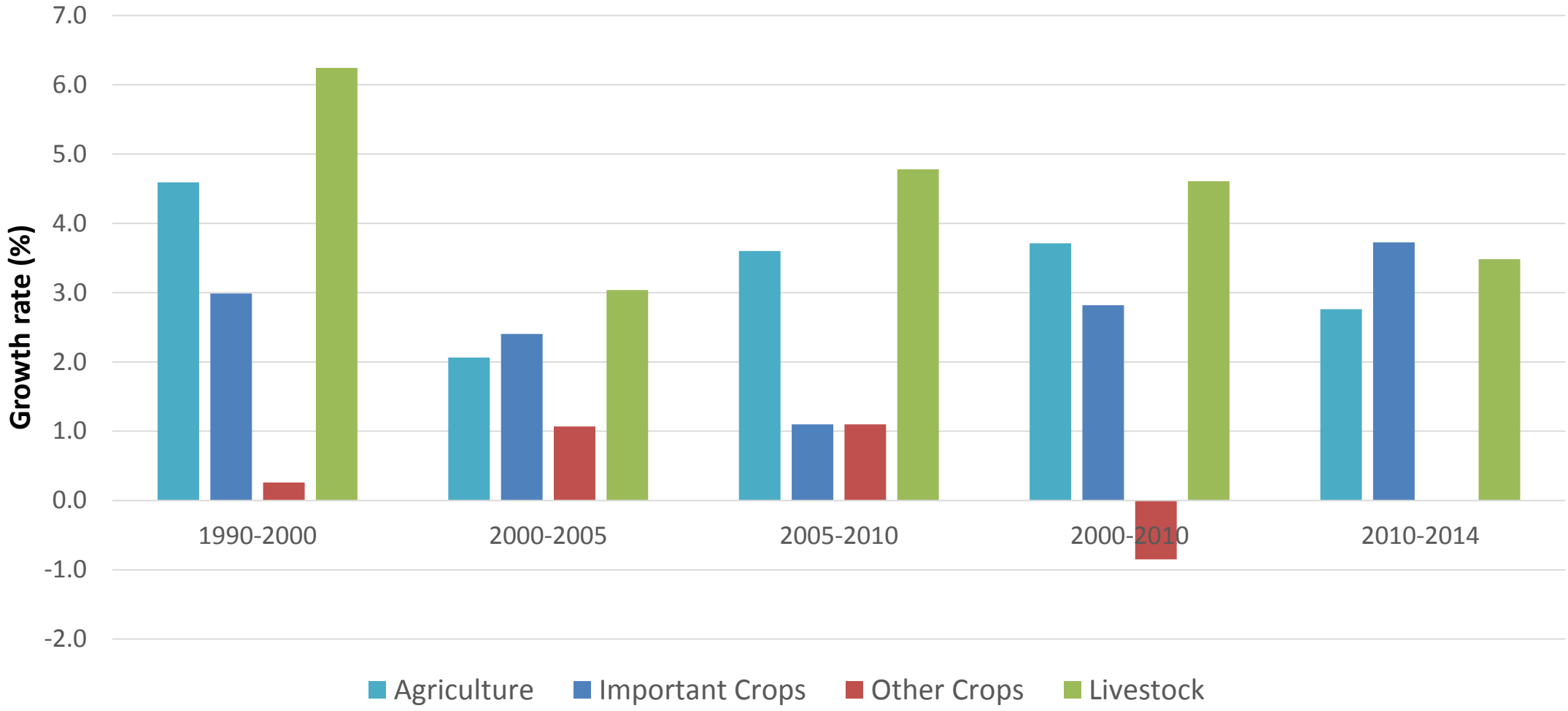


# Food Security in Pakistan - Availability

# Percentage share of agriculture in GDP is declining overtime

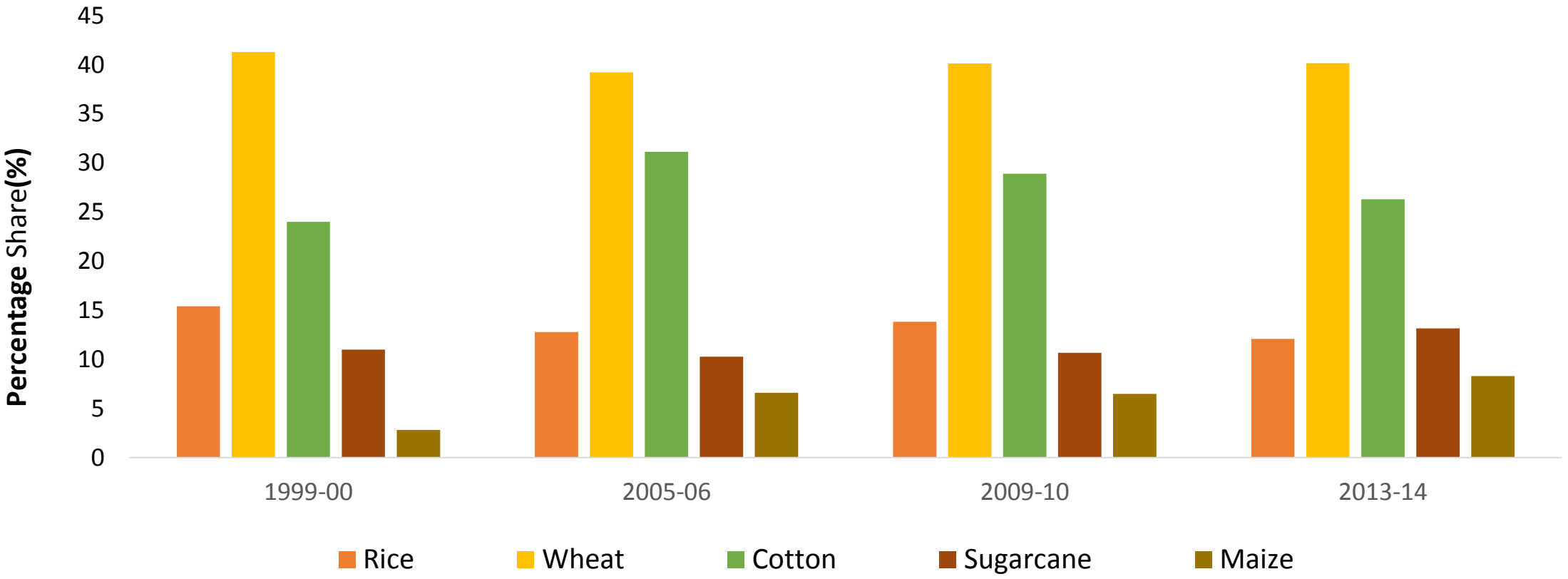

Source: Economic Survey (various issues)

# Growth rates in Agriculture are Declining and Low



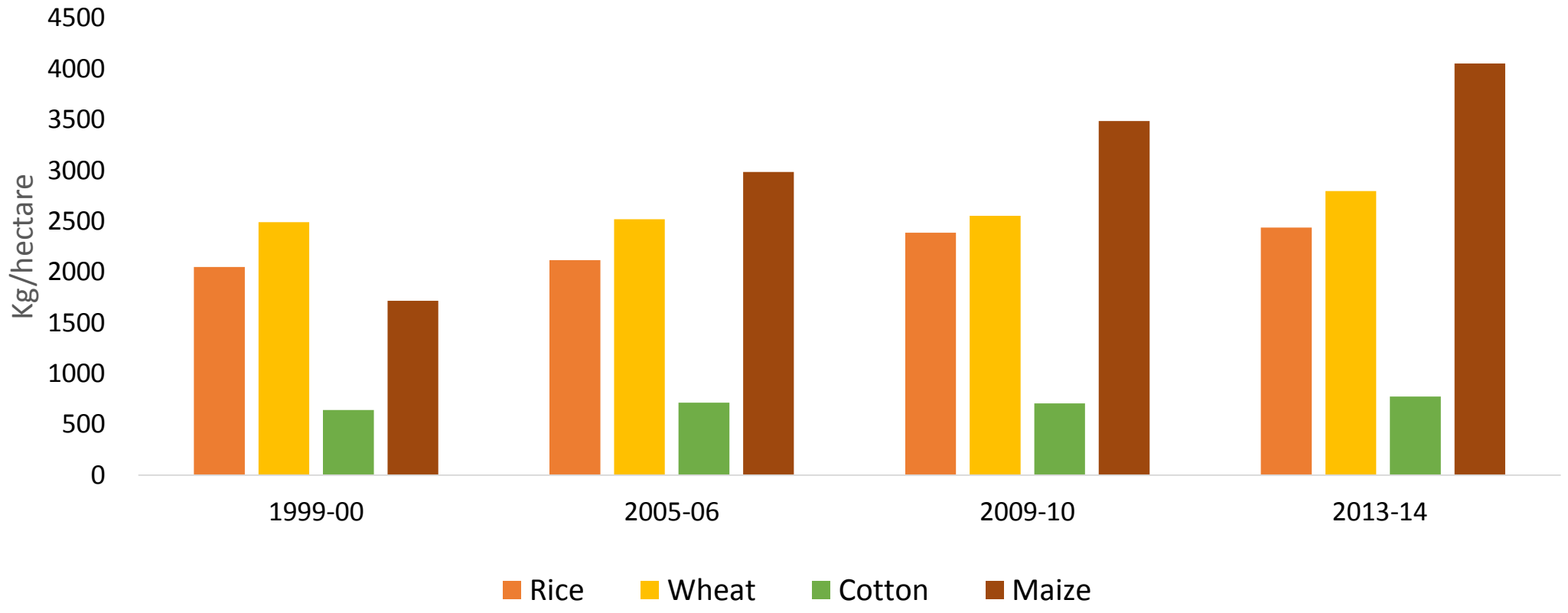

Source: Economic Survey (various issues)

# Shares of important crops are constant



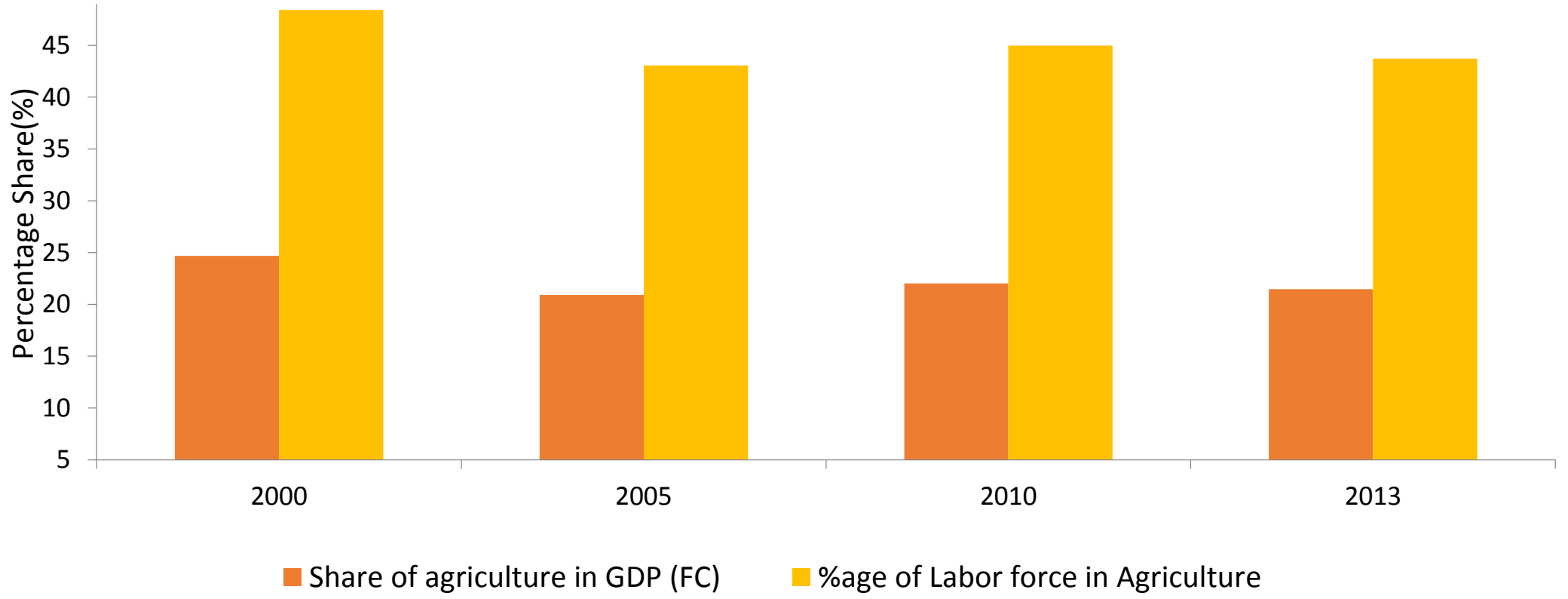

Source: Economic Survey (various issues)

# Yield per hectare of Major Crops are low and stagnant - except Maize



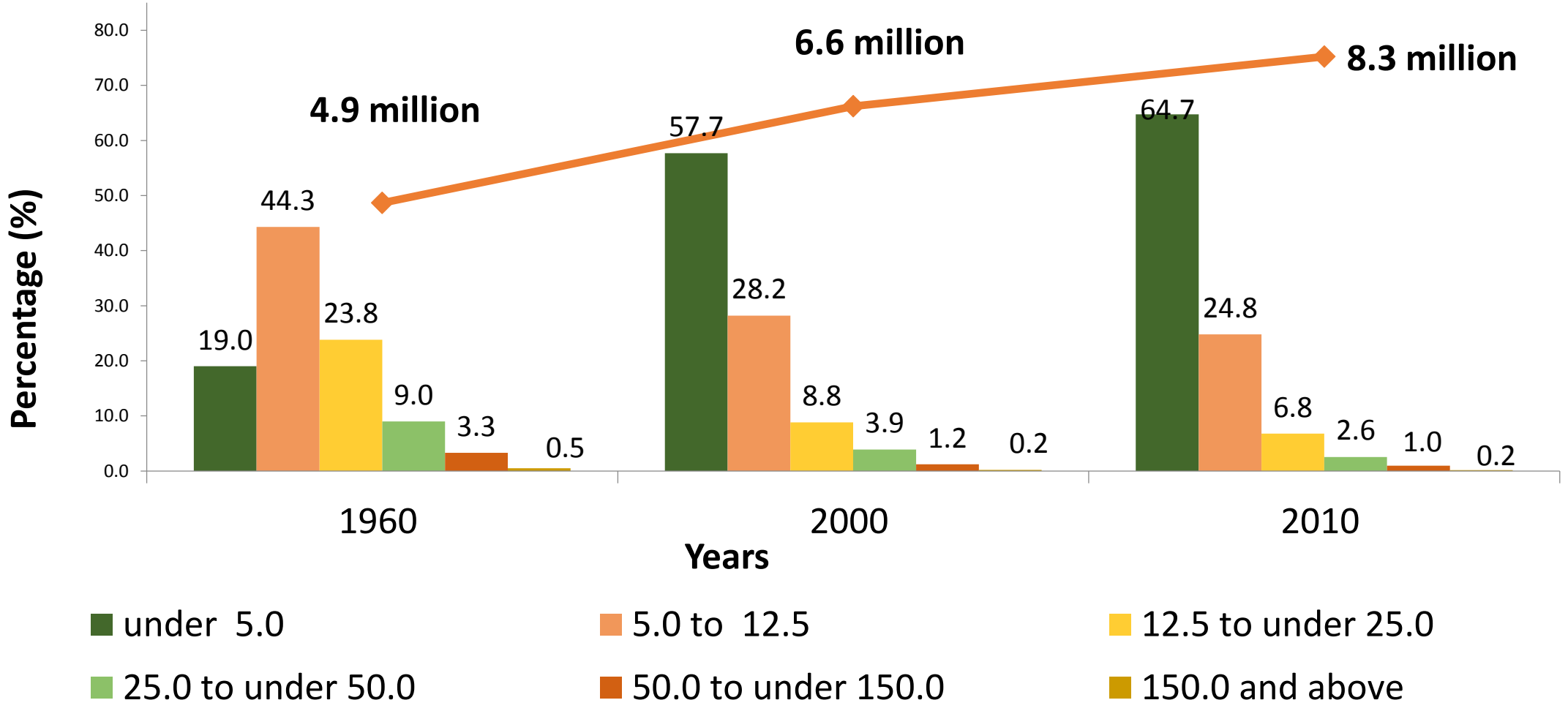

Source: Economic Survey (various issues)

# Share of Labor in Agriculture is high and not declining as share of Agriculture in GDP declines (%)

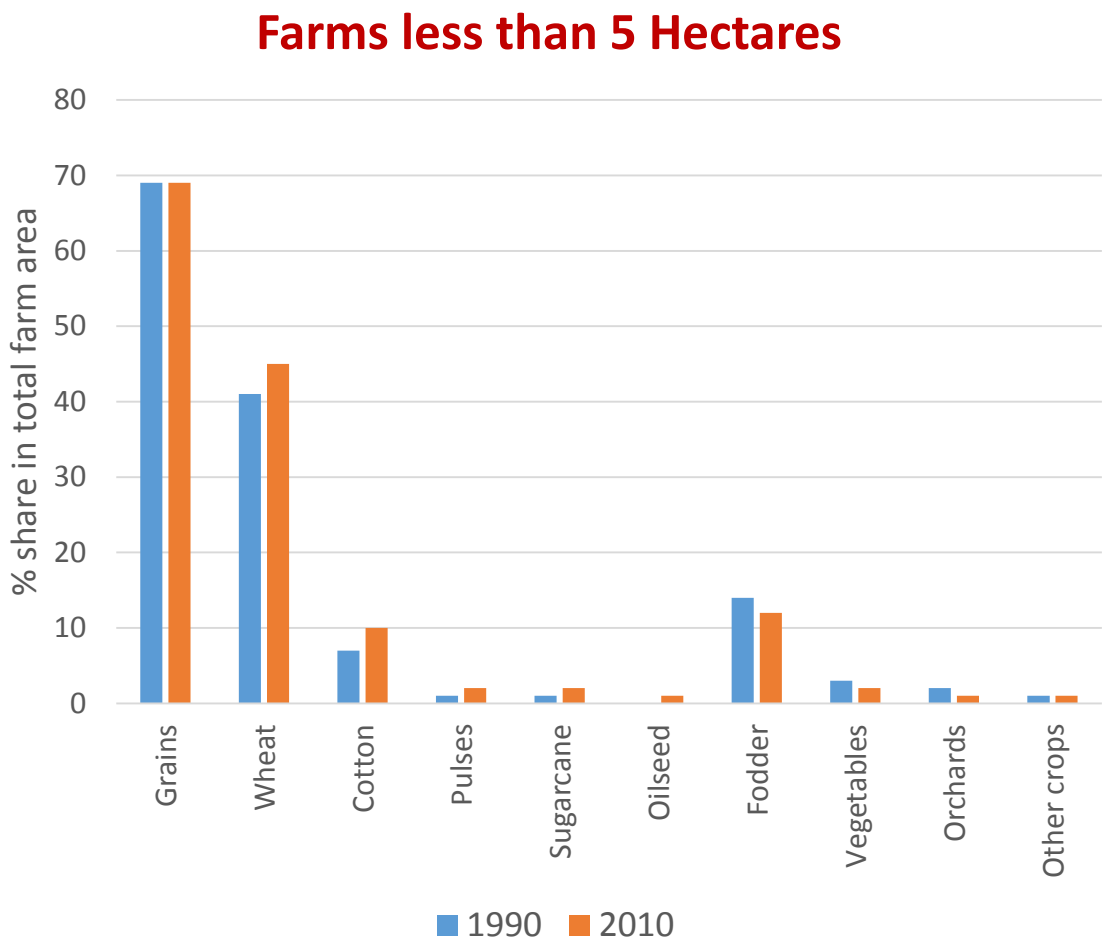


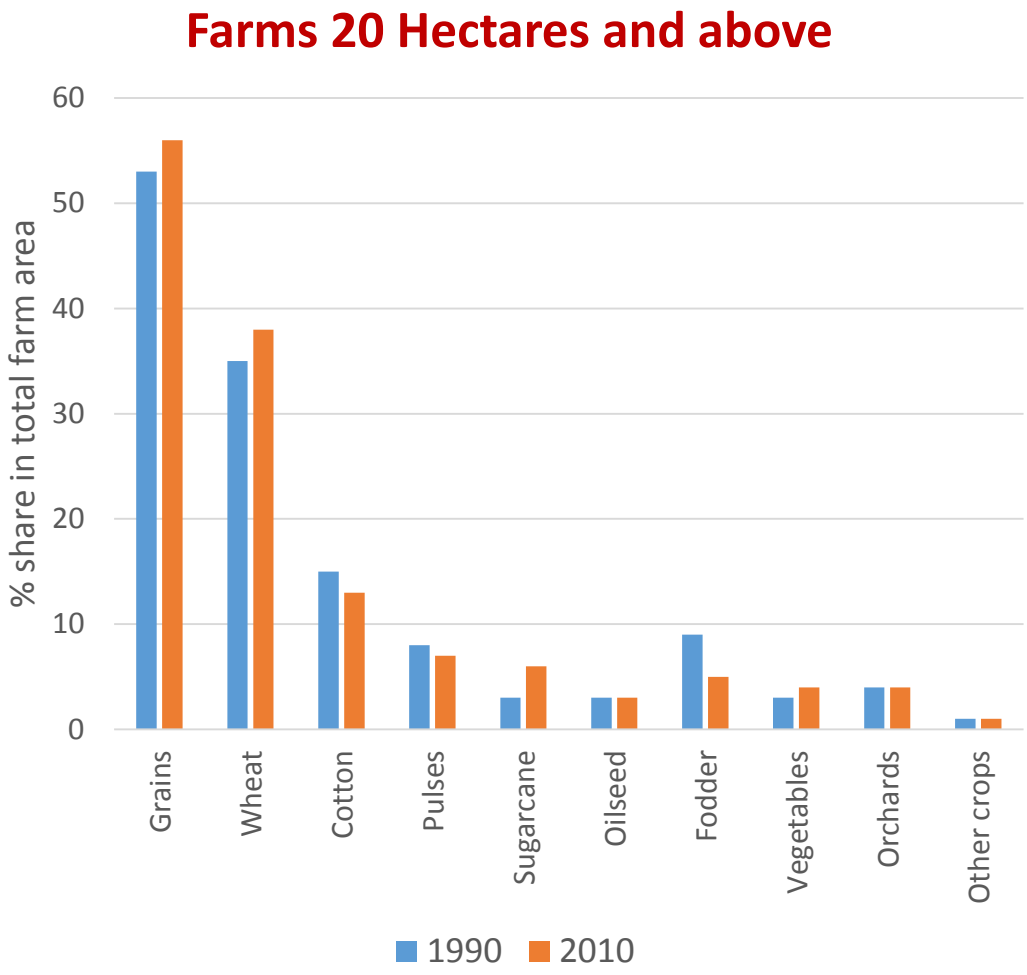

Source: Economic Survey (various issues)

# The Total Number of Under 5 Acres Farms has More than Tripled since 1960



# Limited Diversification in Crop Agriculture across all farm sizes

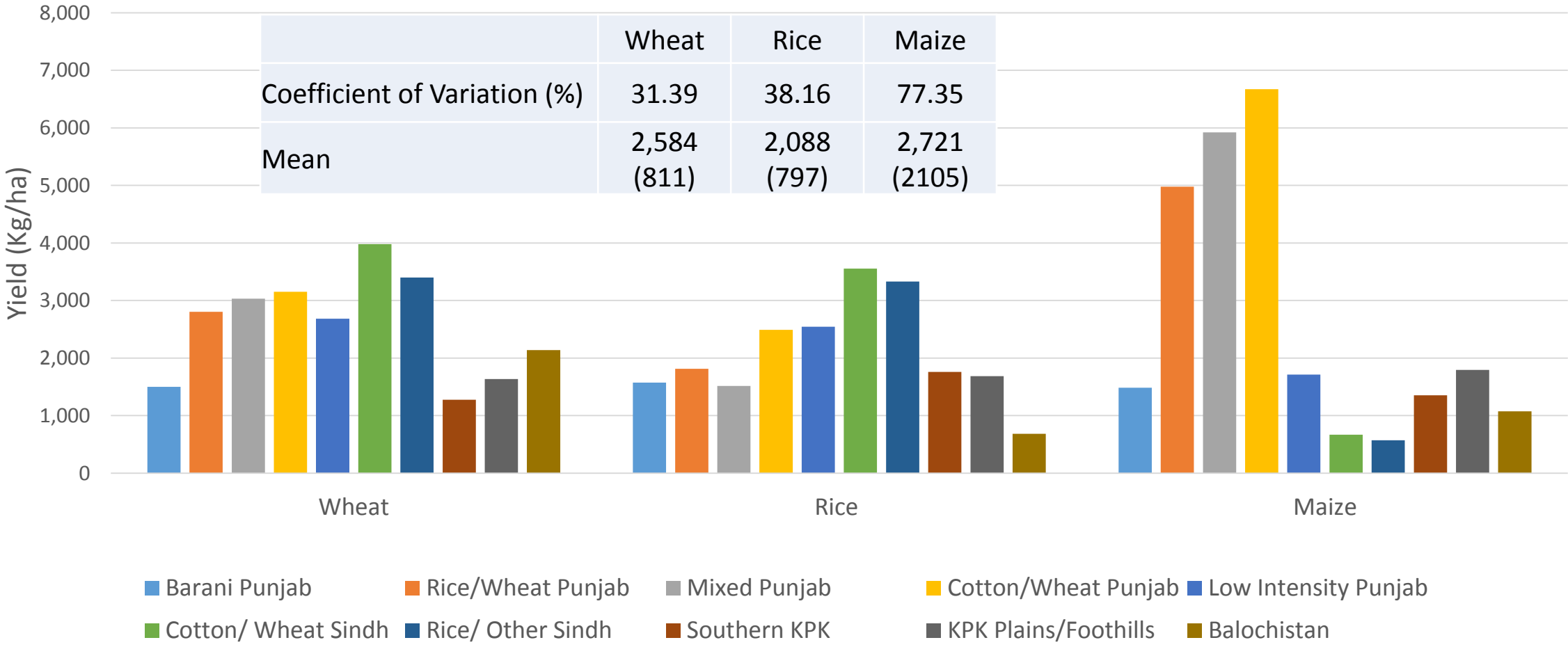



Source: Agriculture Census of Pakistan (1990; 2010)

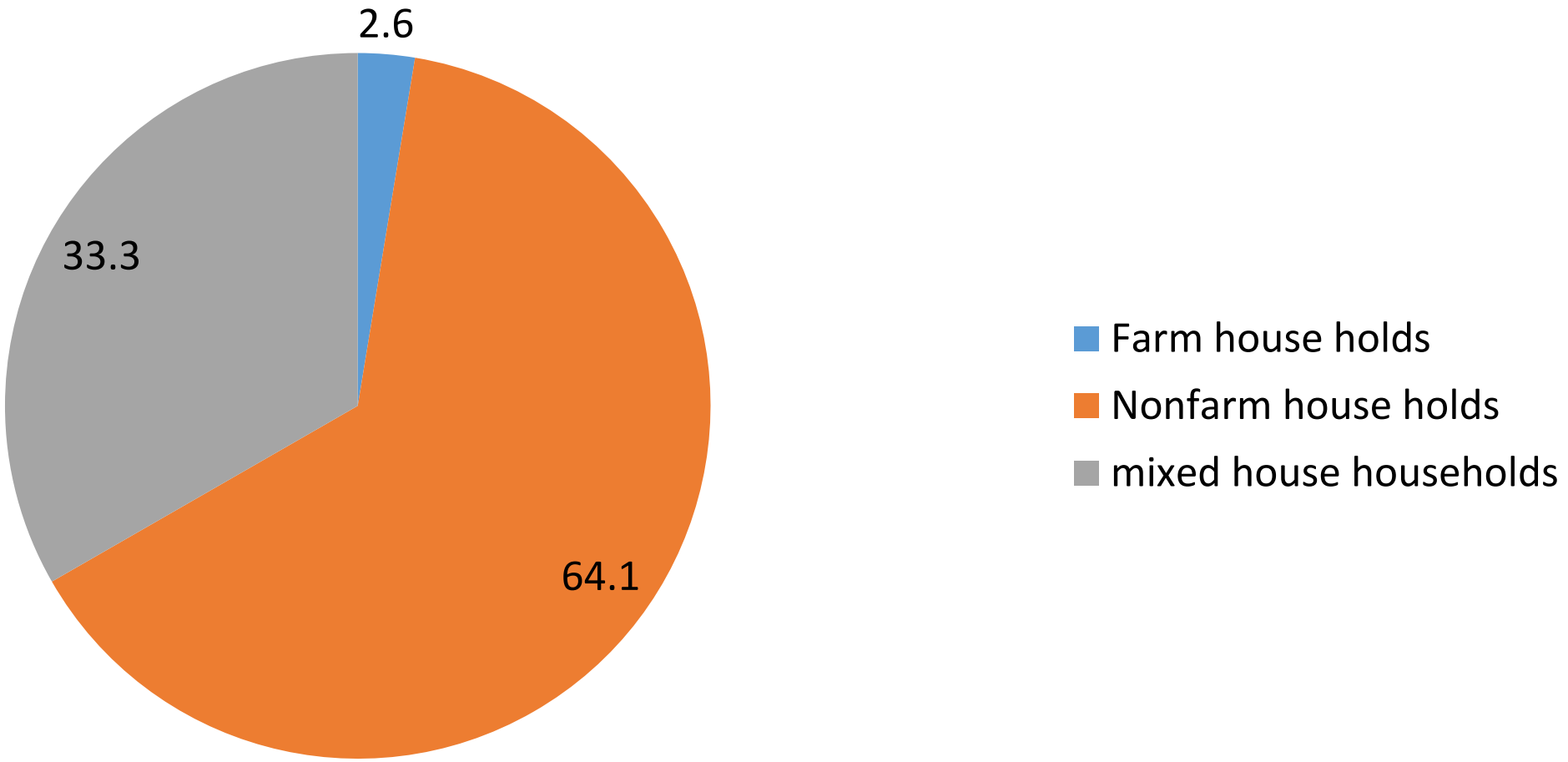
# Large variability of Crop Yields across Agro-climatic Zones in Pakistan 2010-11

| | Wheat | Rice | Maize |
|---|---|---|---|
| Coefficient of Variation (%) | 31.39 | 38.16 | 77.35 |
| Mean | 2,584 (811) | 2,088 (797) | 2,721 (2105) |



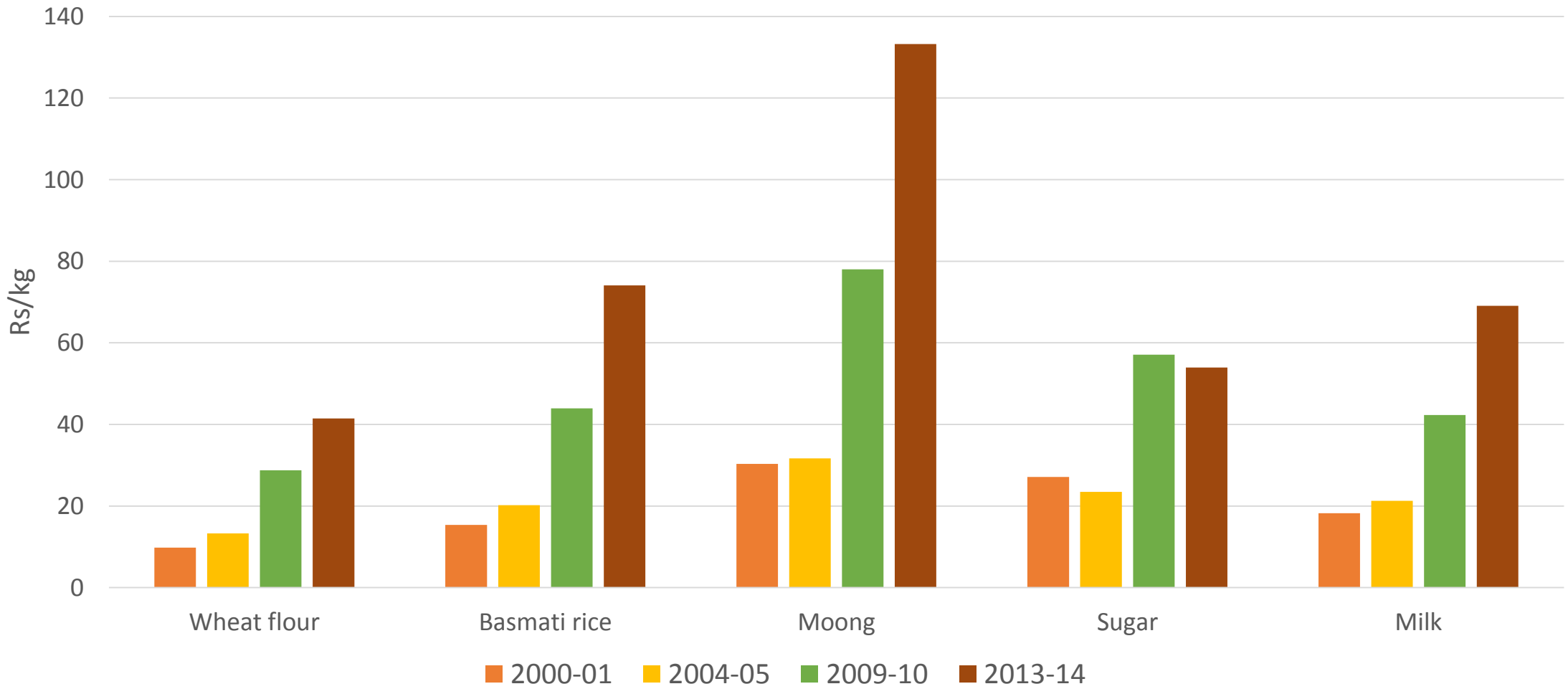

Source: Computed from HIES (2010-11)

# Pure Farm Households are a small proportion of Rural Households in 2014 (%)

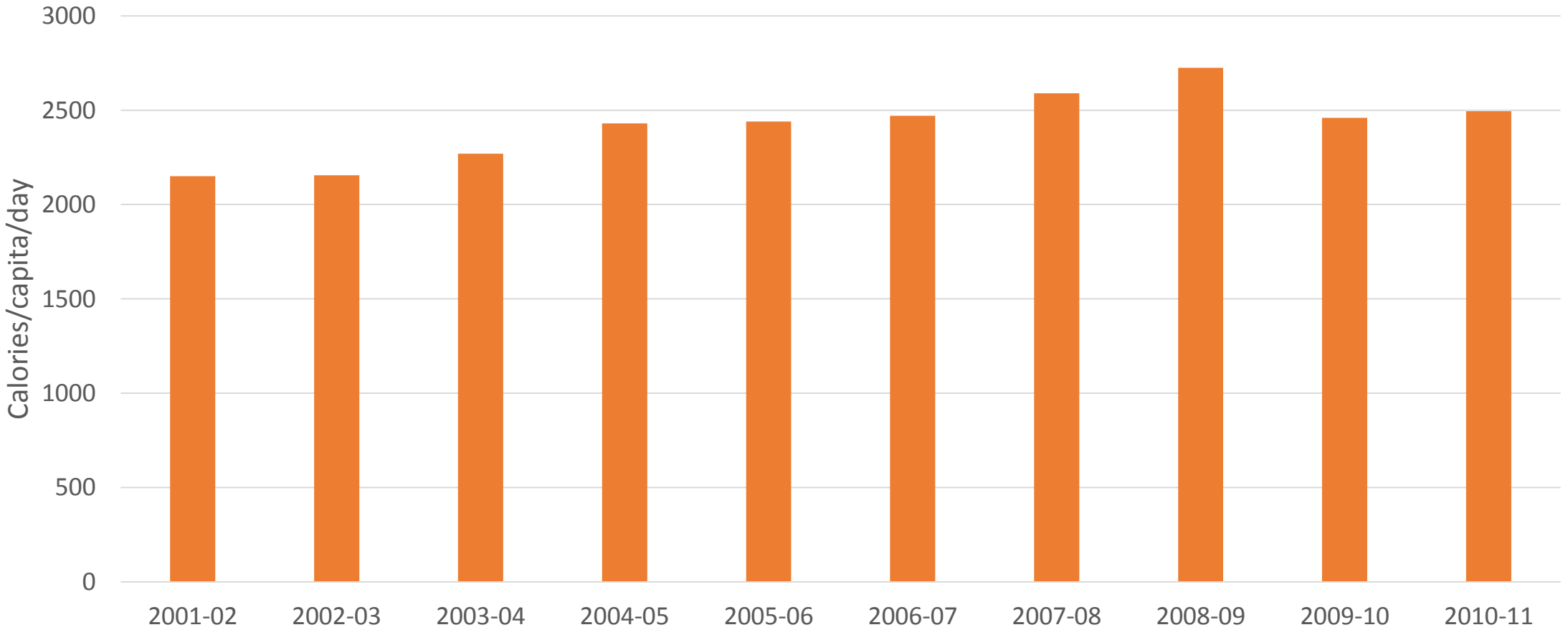


# Food Availability in Pakistan

# Food Prices are Rising in Pakistan

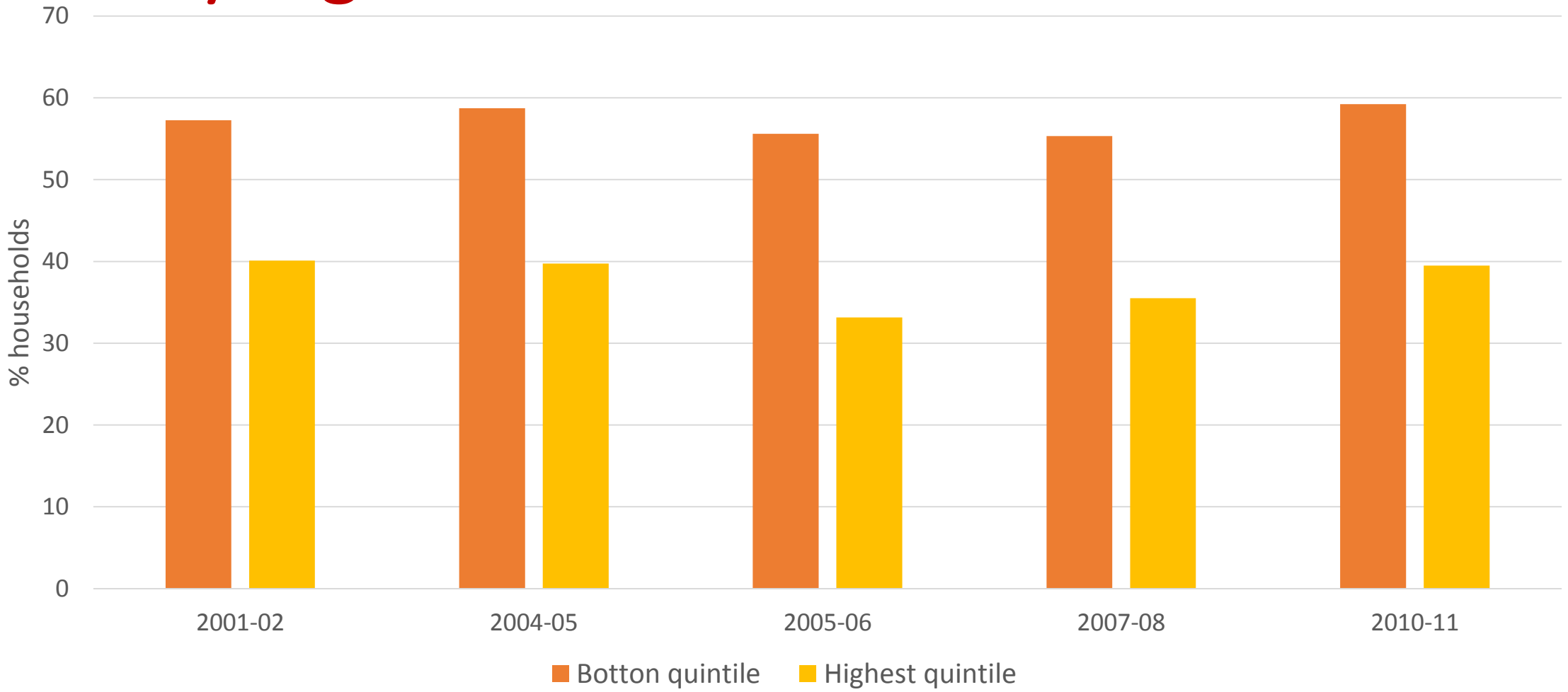


# Average Supply of Calories per capita per day is only marginally higher than minimum subsistence requirement



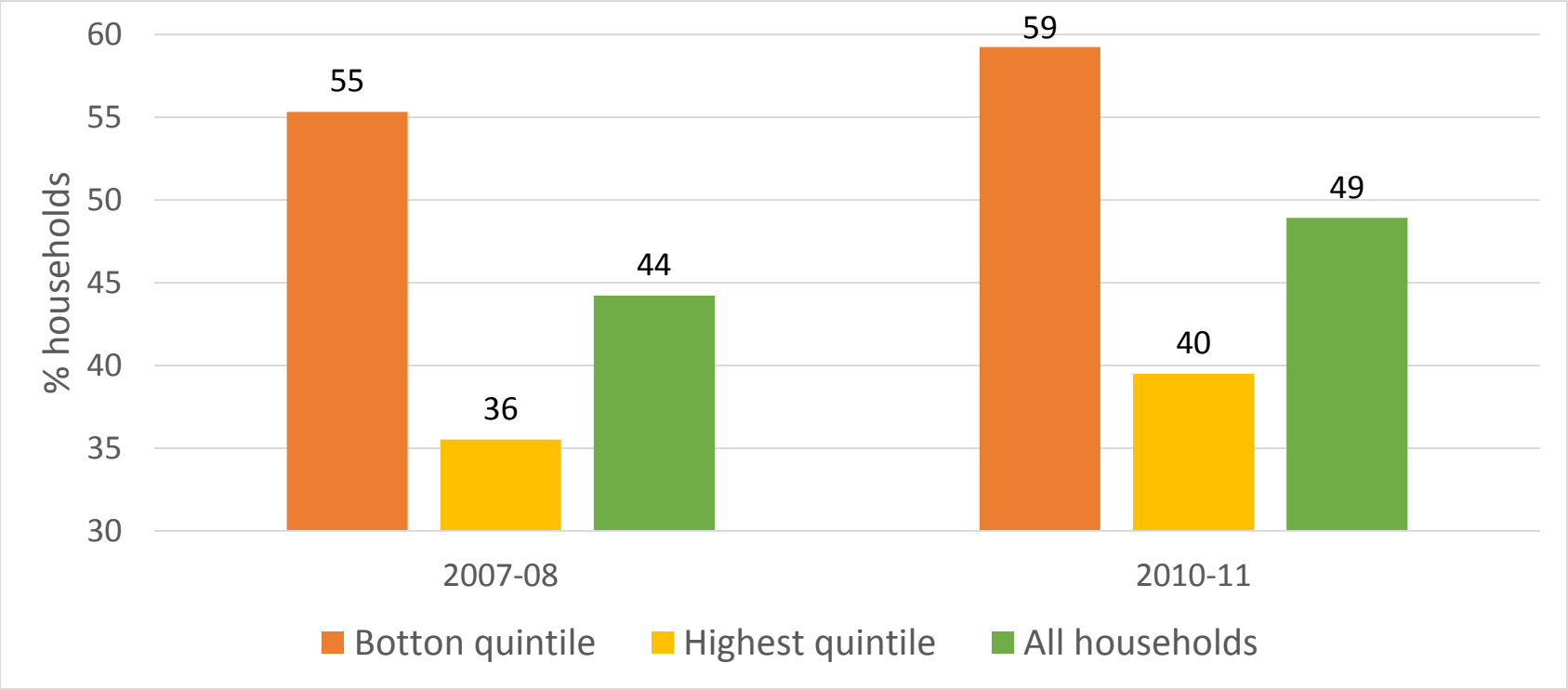
# Food Accessibility in Pakistan

# Share of Food expenditure of Poor Households is Very High



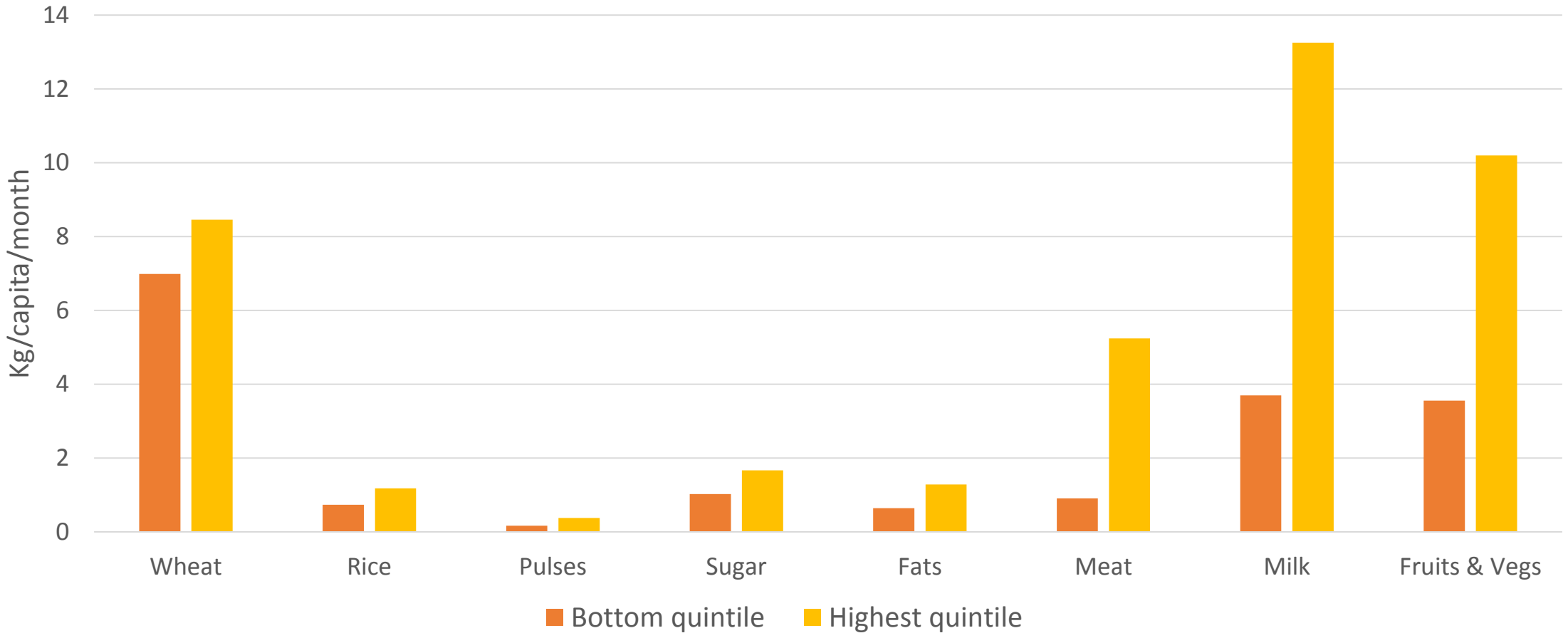

Source: HIES (various issues)

# Share of food expenditure increased by 5 percentage points during 2007/08 – 2010/11



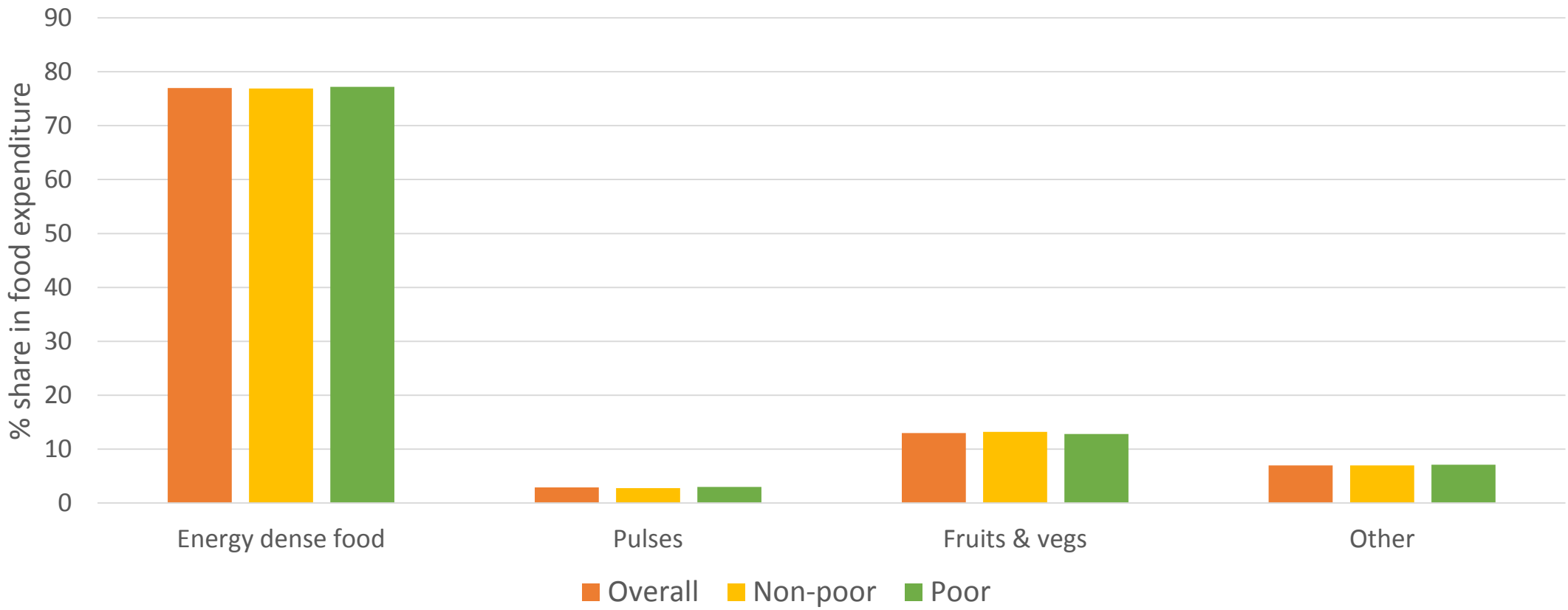

Source: Report of HIES 2007-08, Table 15, available at
http://www.pbs.gov.pk/sites/default/files/social_statistics/publications/hies07_08/table15.pdf
Report of HIES 2010-11, Table 15, available at
http://www.pbs.gov.pk/sites/default/files/pslm/publications/hies10_11/tables/table15.pdf

# Differences in the Consumption Patterns of Poor and Non-poor (Pakistan 2010-11)




Source: HIES 2010-11

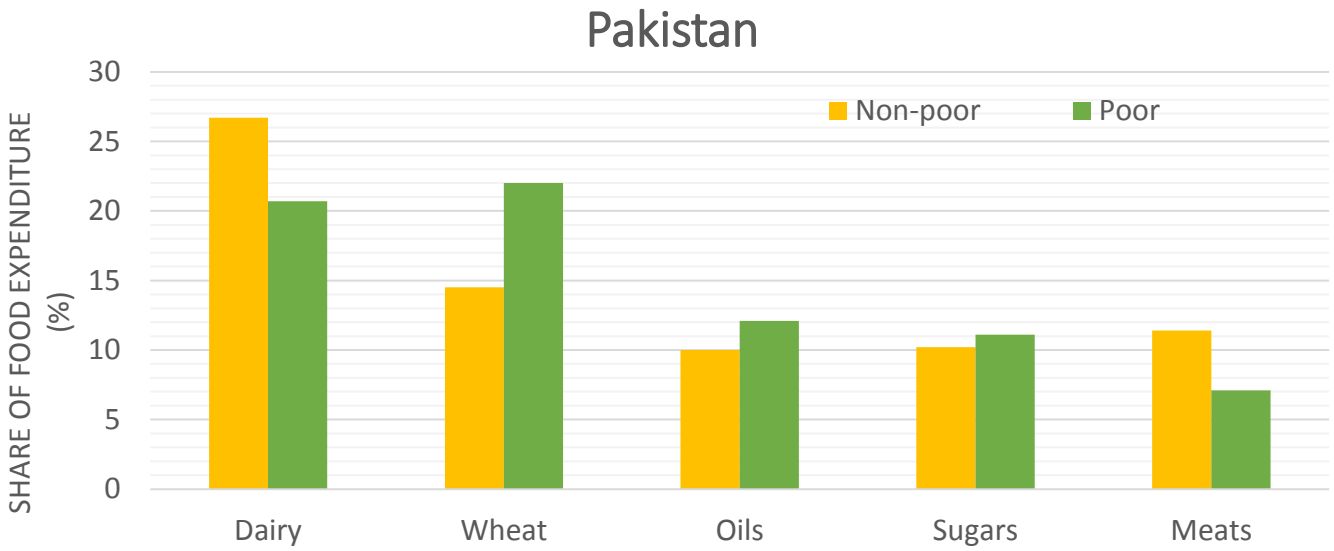
# On Average more than 70% of food expenditure is spent on energy dense food (2010-11)

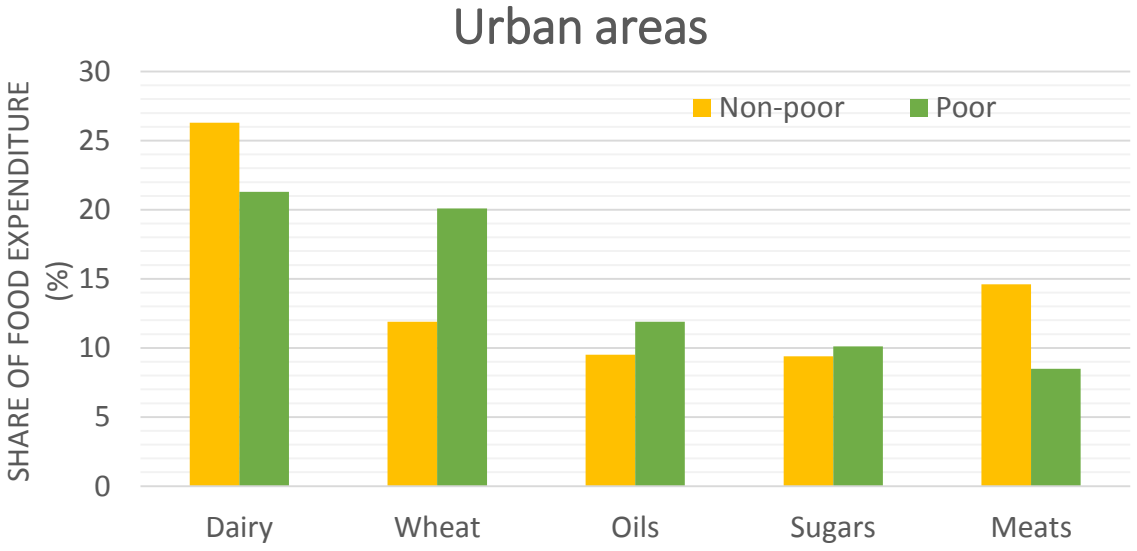


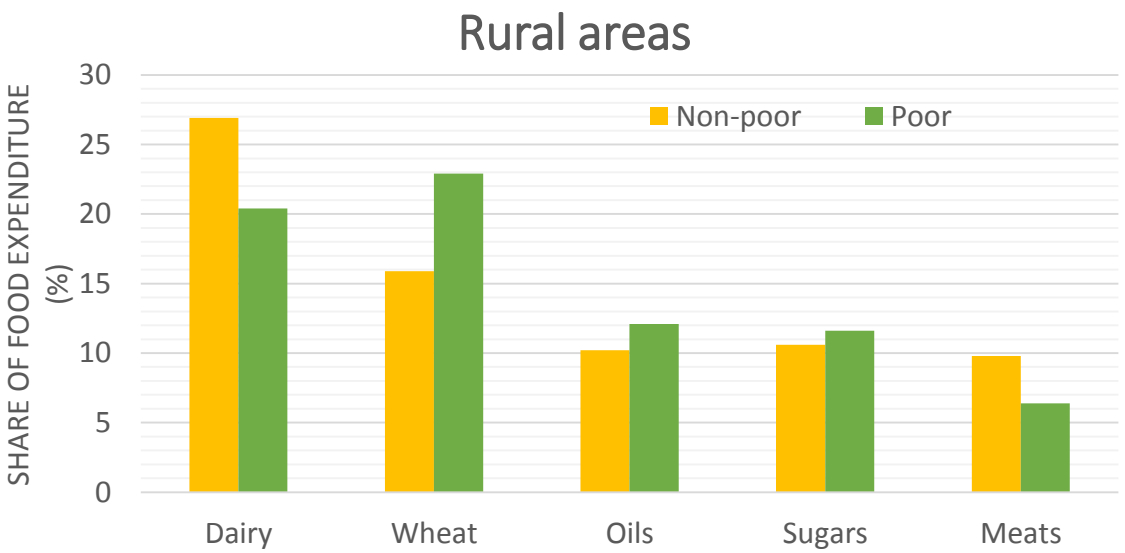

Source: HIES 2010-11

# Poor Spend more on wheat and non-poor on Dairy (2010-11)

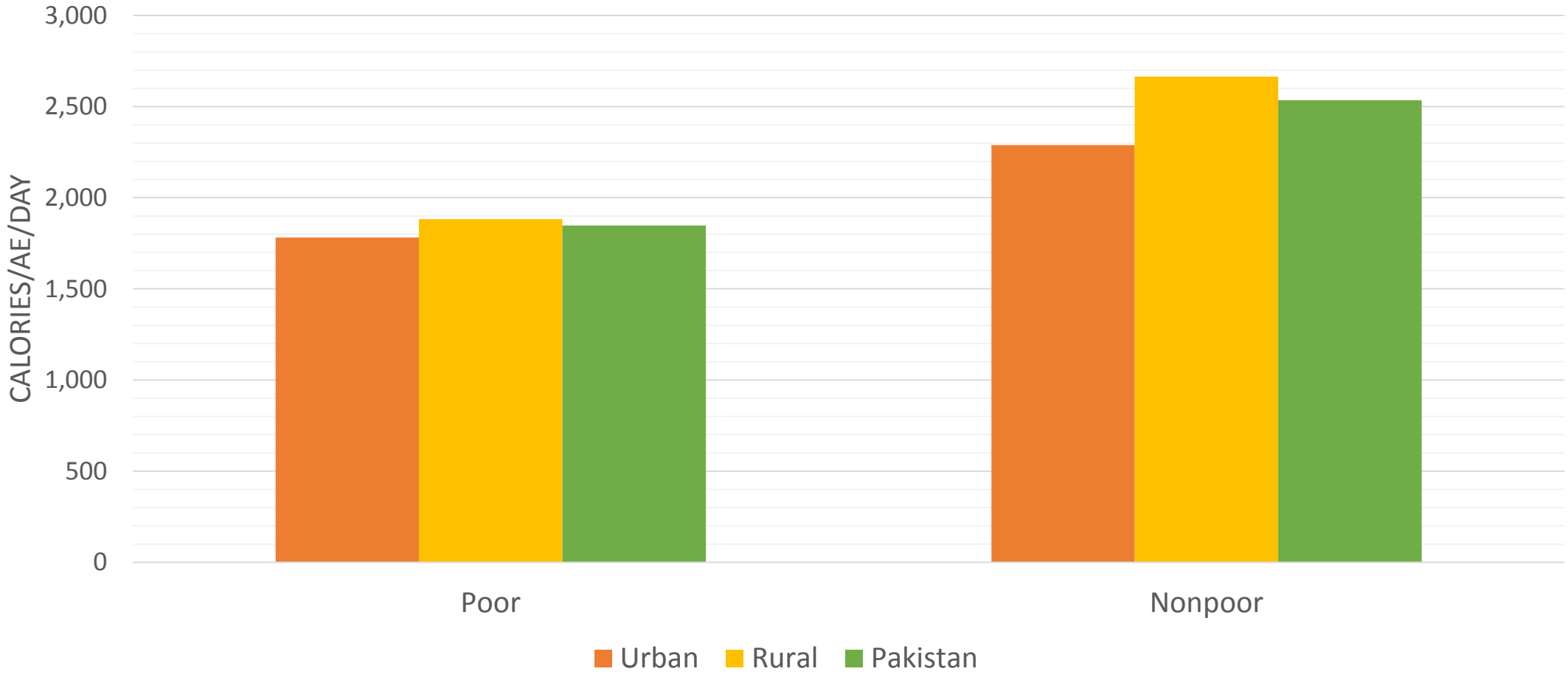
Source: HIES 2010-11



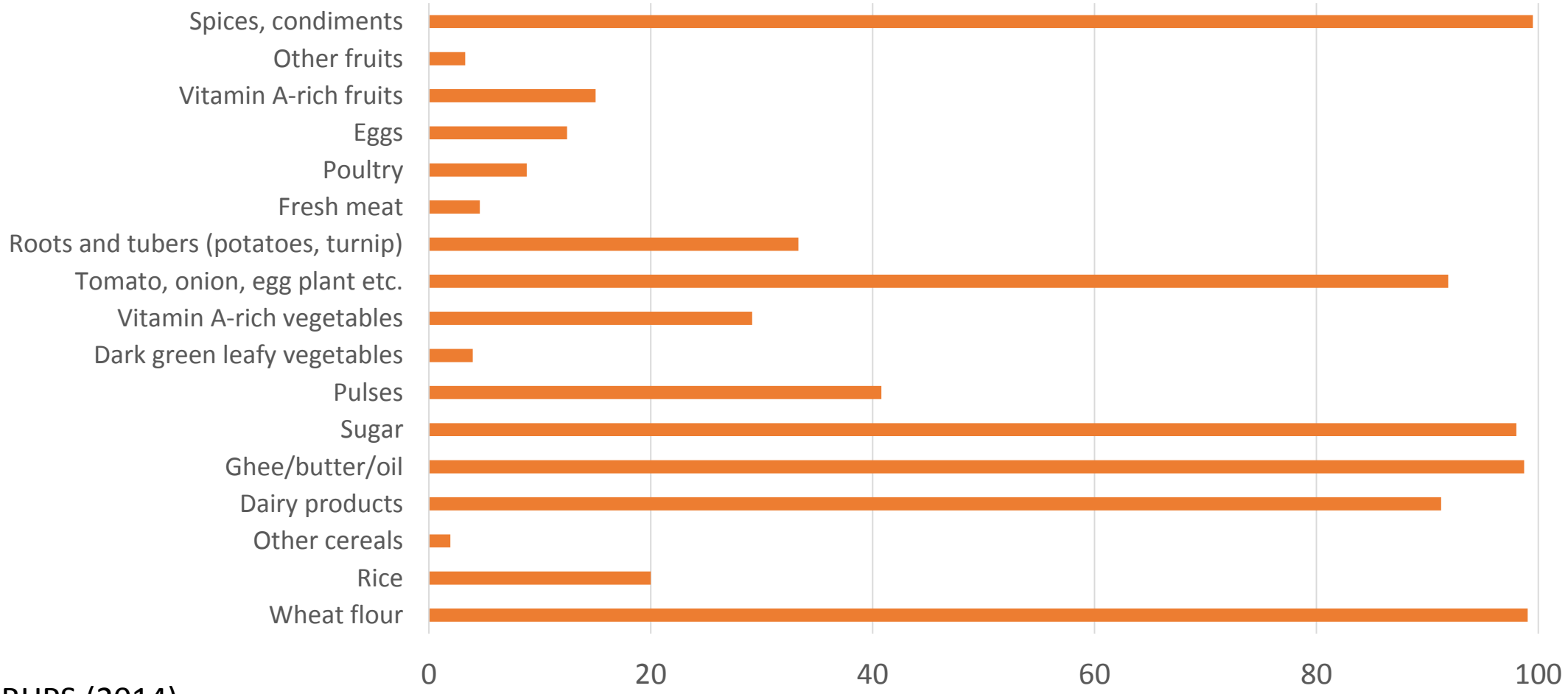



# Calorie Consumption Differs very little across Poverty Status in Rural Areas (based on Official Data)



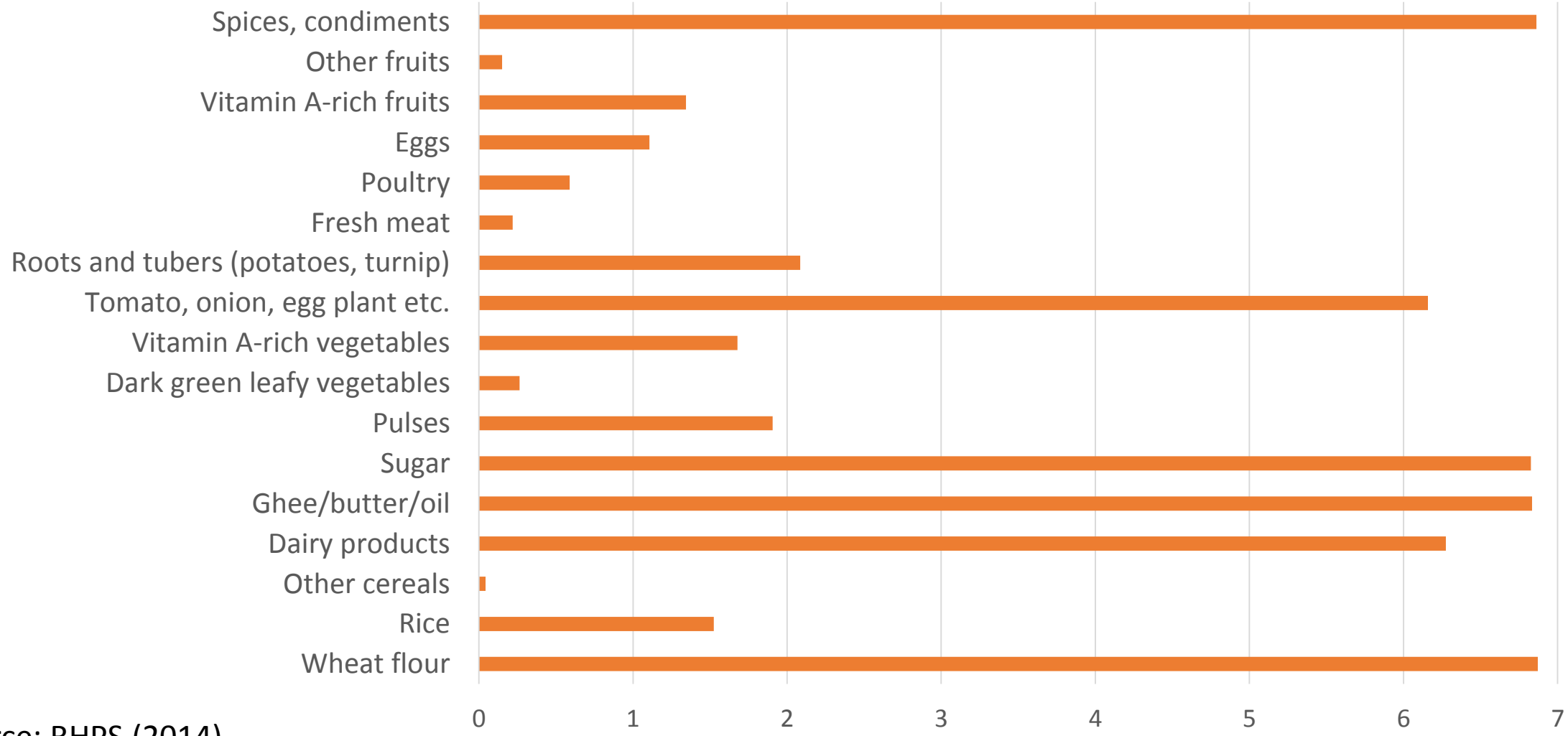

Source: HIES 2010-11

# Dietary Diversity in Rural Pakistan 2014:
## (% households reporting type of food items consumed in last 24 hours - PSSP)



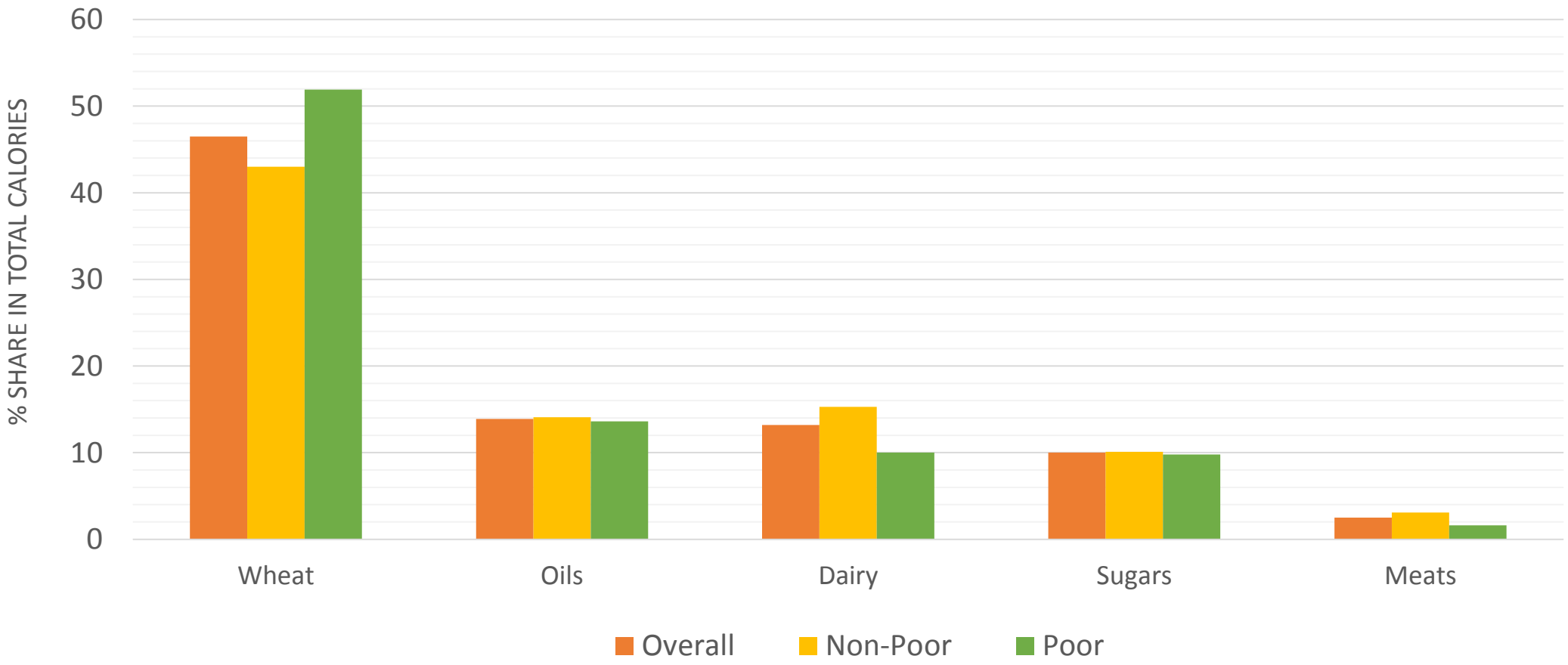

Source: RHPS (2014)

# Food Frequency Reported in last seven days 2014 (% of hholds - PSSP)



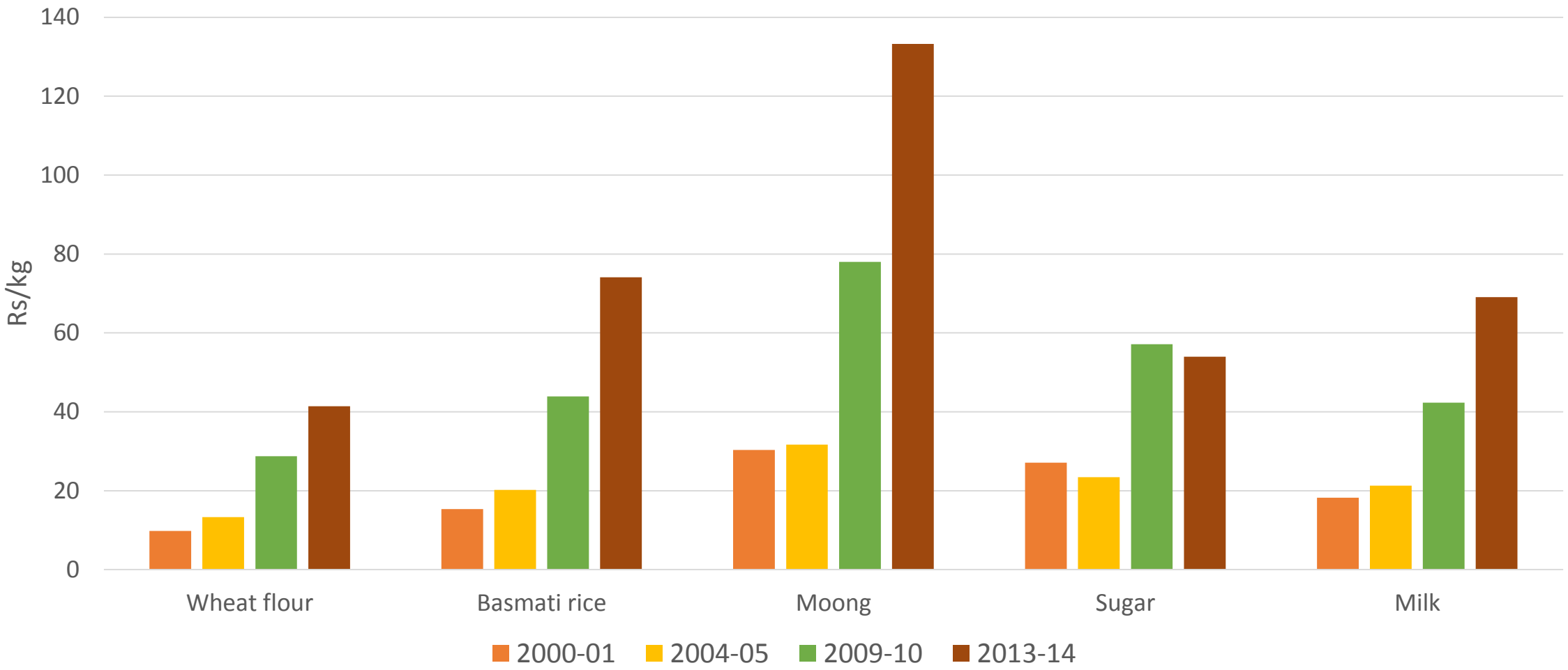

Source: RHPS (2014)

# Wheat is the major source of energy

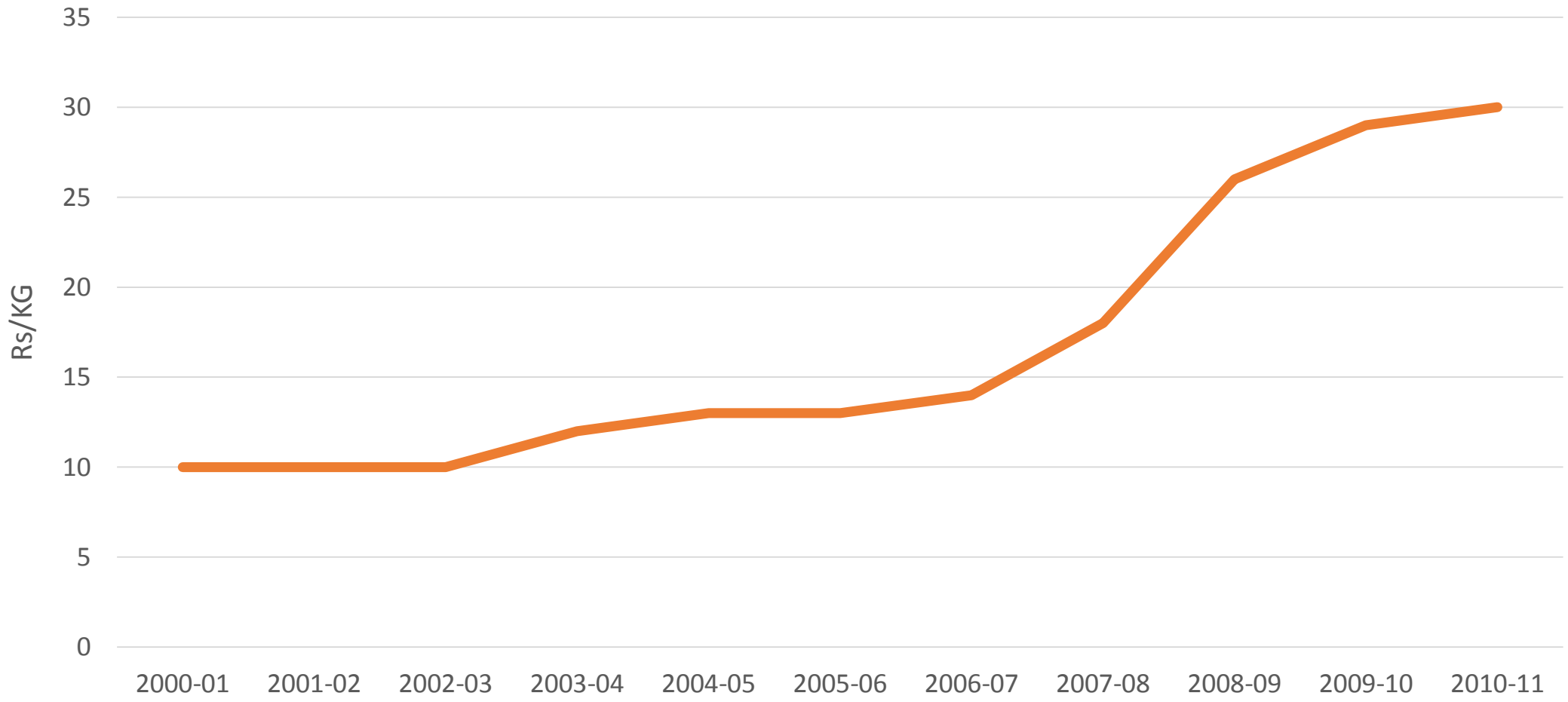



Source: HIES 2010-11

# Trends in the Prices of Food Items

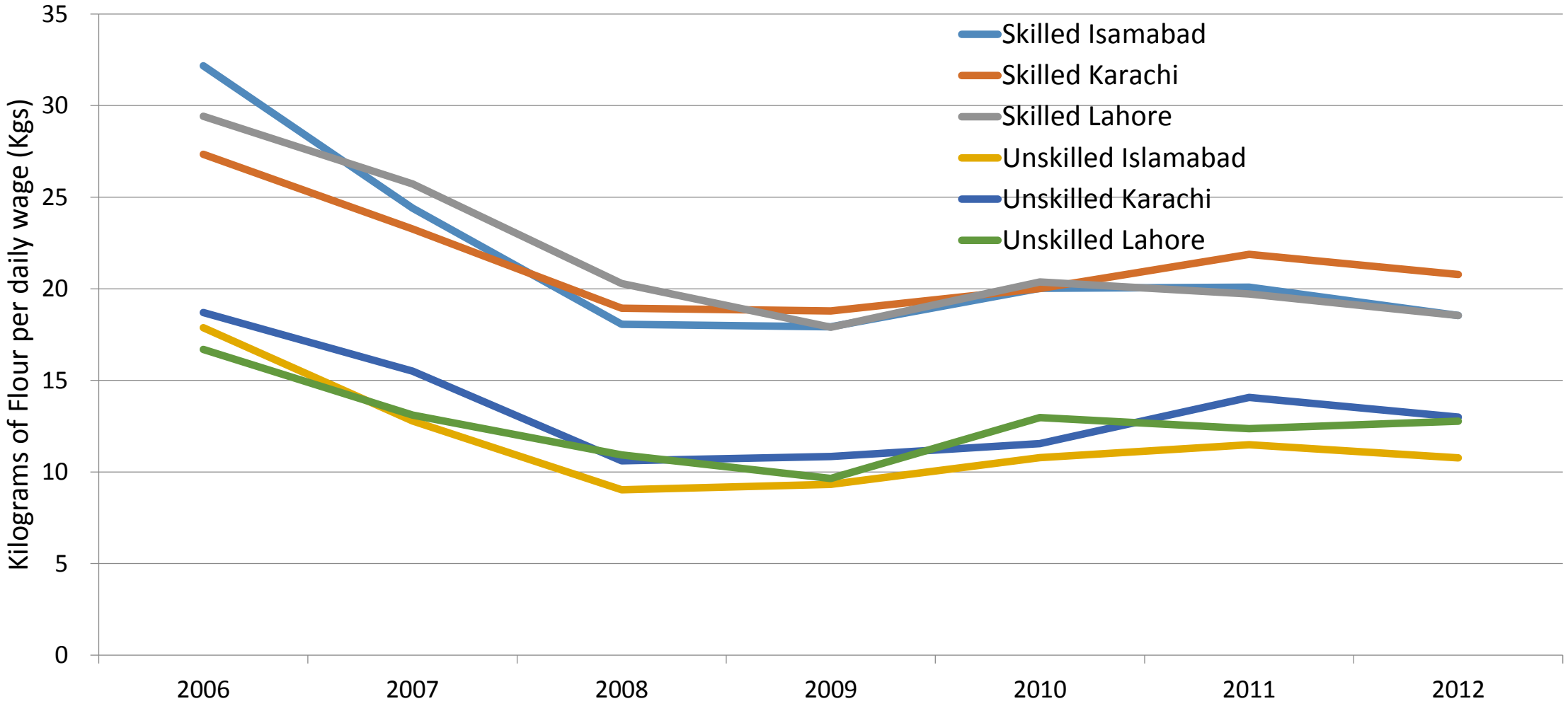


# Sharp Increase in the Price of Wheat since 2007-08




Source: GOP (2014), Economic Survey 2013-14

# Decreasing ability to access: Kilograms of Wheat Flour that one Day's Wages can Buy declining



# Calories consumed and the cost of calories – (PSSP Study)

| Region or Population Group | Total Calories (per AE/day) | Food Expenditure (per AE/day) (Rs) | 100 Calories cost Overall Food (Rs) | Calories from wheat (per AE/day) | Expenditure on Wheat (per AE/day) (Rs) | 100 Calories cost from Wheat (Rs) |
|---|---|---|---|---|---|---|
| Rural Poor | 1,882 | 36.8 | 1.95 | 1,007 | 8.2 | 0.81 |
| Rural Non-Poor | 2,664 | 67.0 | 2.52 | 1,208 | 7.7 | 0.64 |
| Urban Poor | 1,782 | 40.1 | 2.25 | 881 | 9.2 | 1.04 |
| Urban Non-Poor | 2,289 | 74.8 | 3.27 | 872 | 7.3 | 0.83 |
| Pakistan | 2,260 | 57.0 | 2.52 | 1,041 | 7.3 | 0.70 |

Source: Malik et al (2014), estimated from HIES (2010-11)

# Change in Prices and Income and Demand for Wheat 2010-11: (PSSP Study)

| | Budget share on wheat | Expenditure elasticity | Own price uncompensated elasticity | Own price Compensated elasticity | Wheat-rice elasticity |
|---|---|---|---|---|---|
| Rural areas | 18.6 | 0.79 | -0.32 | -0.209 | 0.006 |
| Poor | 22.9 | 0.84 | -0.35 | -0.165 | -0.005 |
| Non-poor | 15.8 | 0.75 | -0.35 | -0.227 | 0.023 |
| Urban areas | 15.1 | 0.74 | -0.31 | -0.123 | 0.006 |
| Poor | 20.0 | 0.92 | -0.36 | -0.155 | -0.001 |
| Non-poor | 11.8 | 0.67 | -0.20 | -0.107 | -0.002 |
| Pakistan | 17.5 | 0.77 | -0.32 | -0.179 | 0.010 |
| Poor | 22.0 | 0.81 | -0.21 | -0.163 | -0.012 |
| Non-poor | 14.5 | 0.76 | -0.39 | -0.173 | 0.021 |

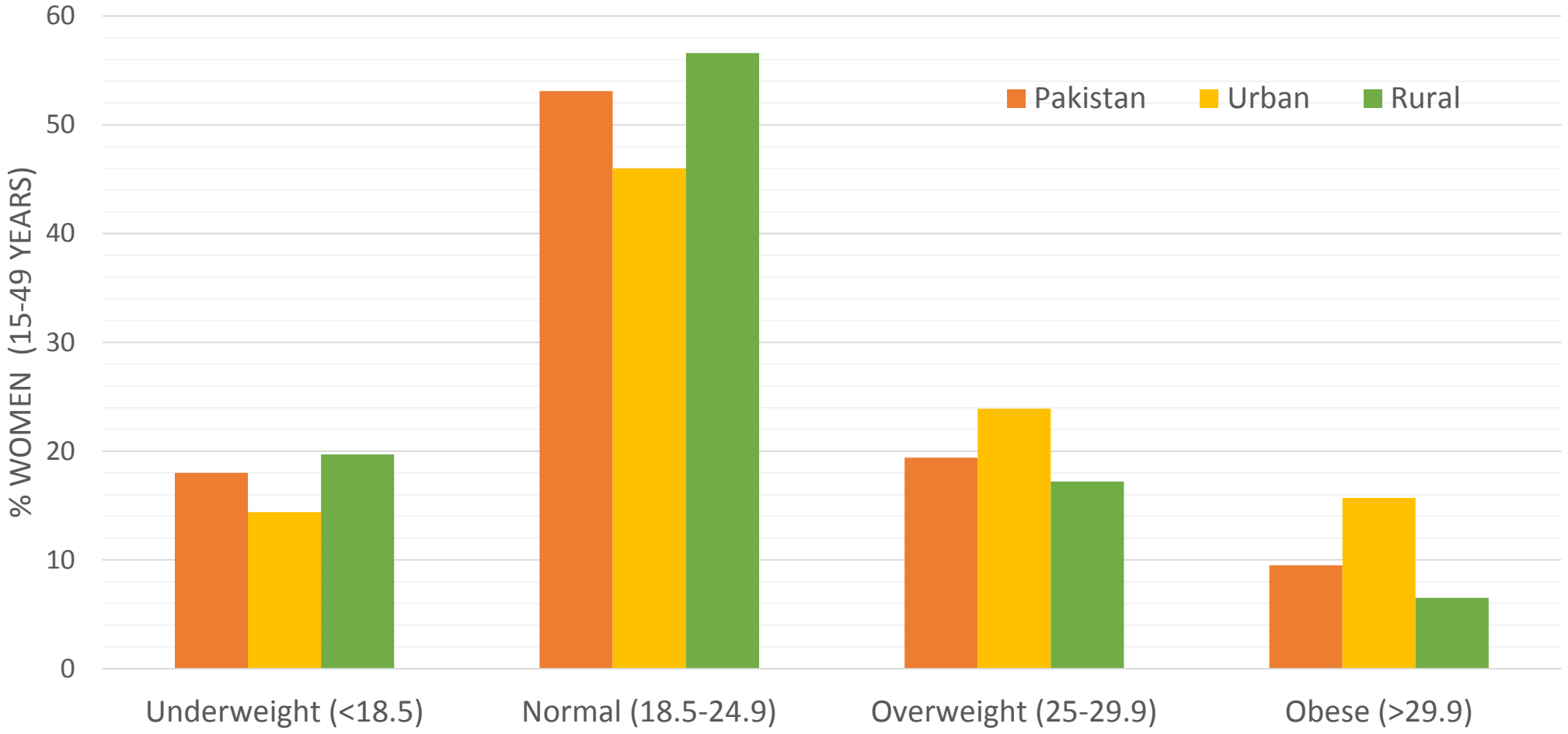
Source: Malik et al (2014), estimated from HIES (2010-11)

# Estimates indicate that Increase in Wheat Price has possible adverse implications for other essential Human Development Indicators

- An increase in the price of wheat **may not result in substitution with other food items**
- However, **substitution with non-food items is possible**
- **A substitution with health and education may worsen the already low human development indicators and may have adverse effect on already high levels of poverty in the country**
- Serious implications especially for current **nutritional status** and productivity of future generation
- A reduction in the purchasing power of the wage earners can aggravate this situation further.

# Food Utilization: Dietary patterns impact on nutritional status

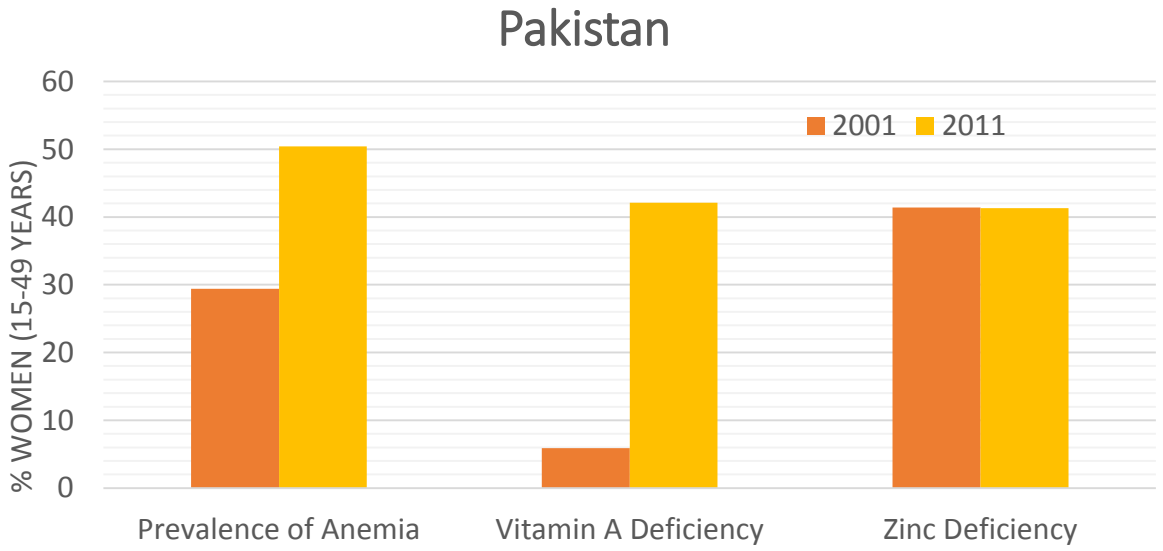
# Malnutrition among Women – Only 53 % are normal (BMI -official data)

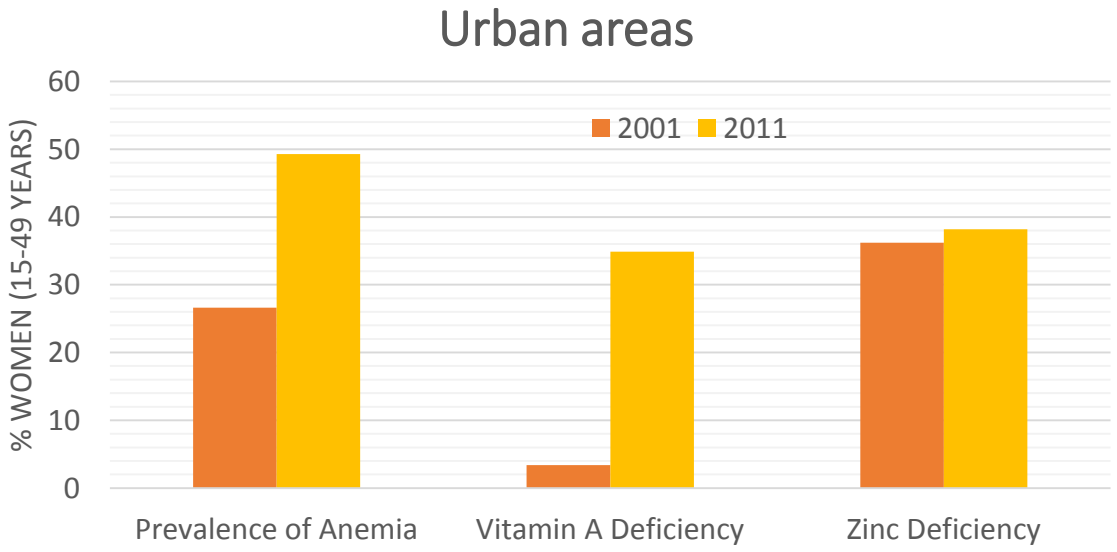


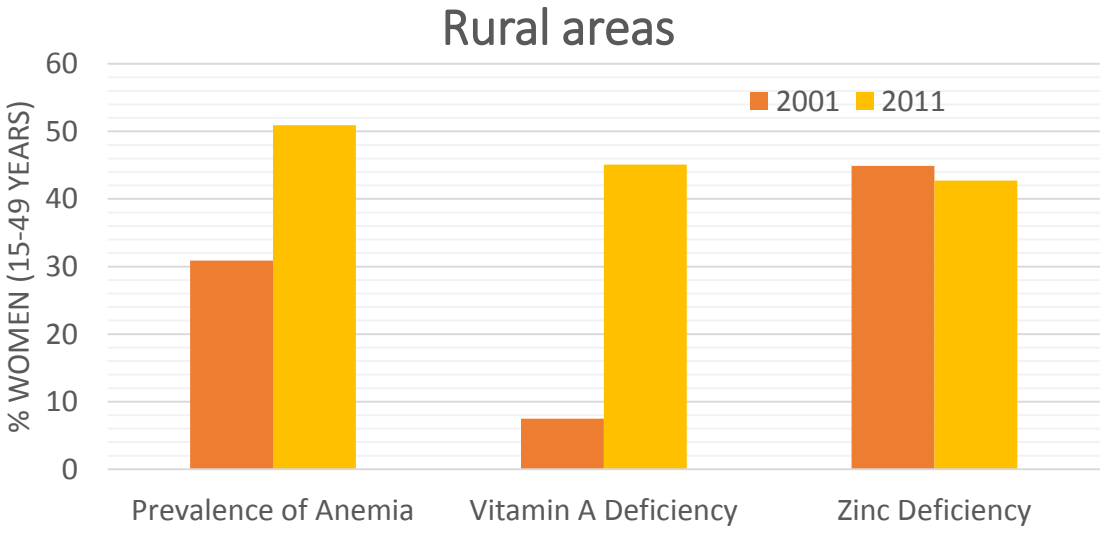

Source: NNS 2010-11

# Micronutrient Deficiency among Women (2001-2011 - official data)

Source: NNS 2010-11

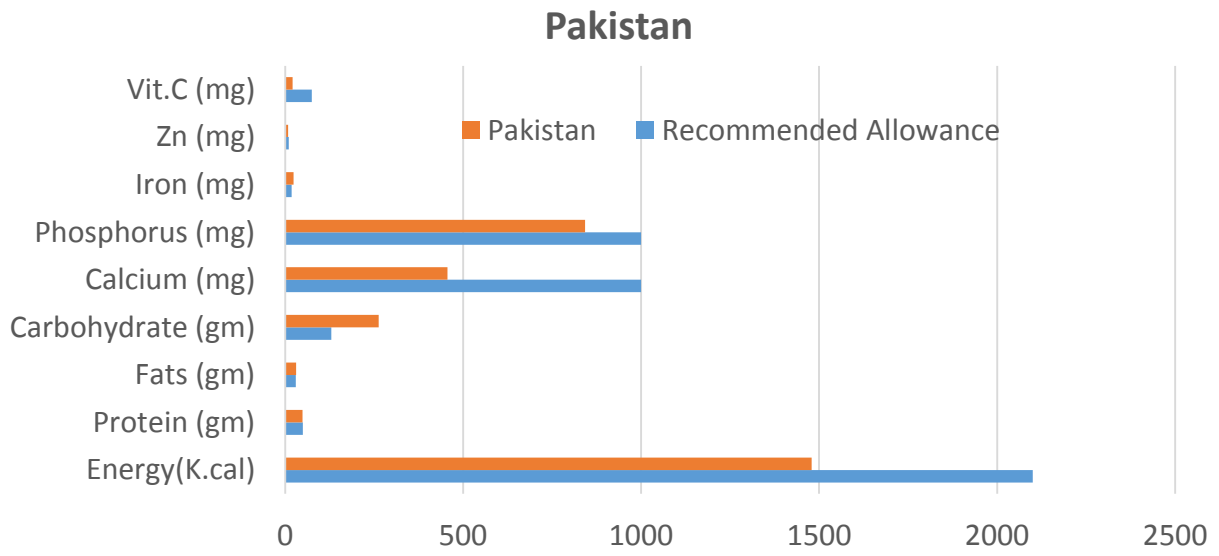


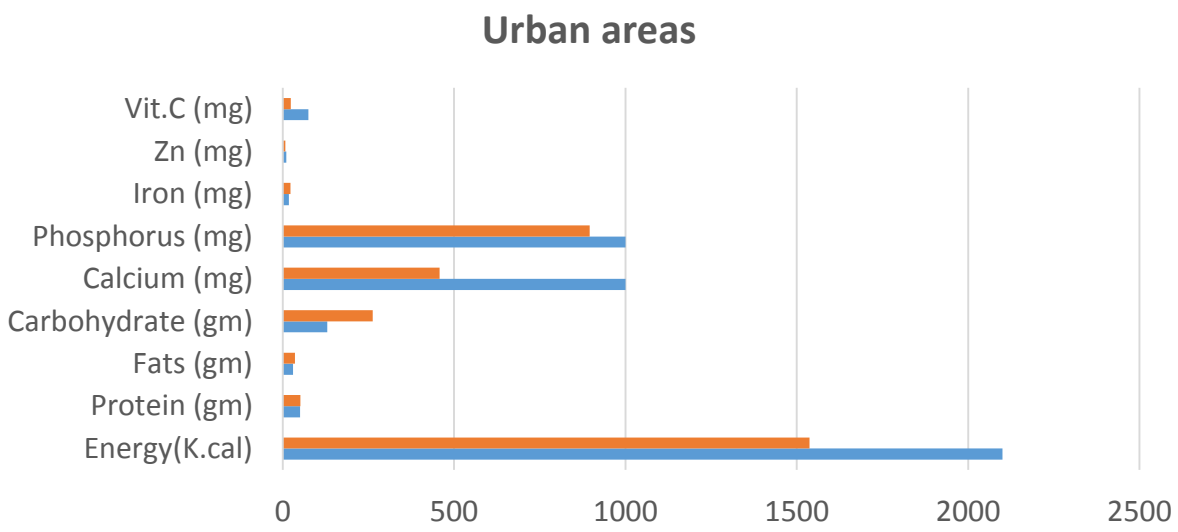



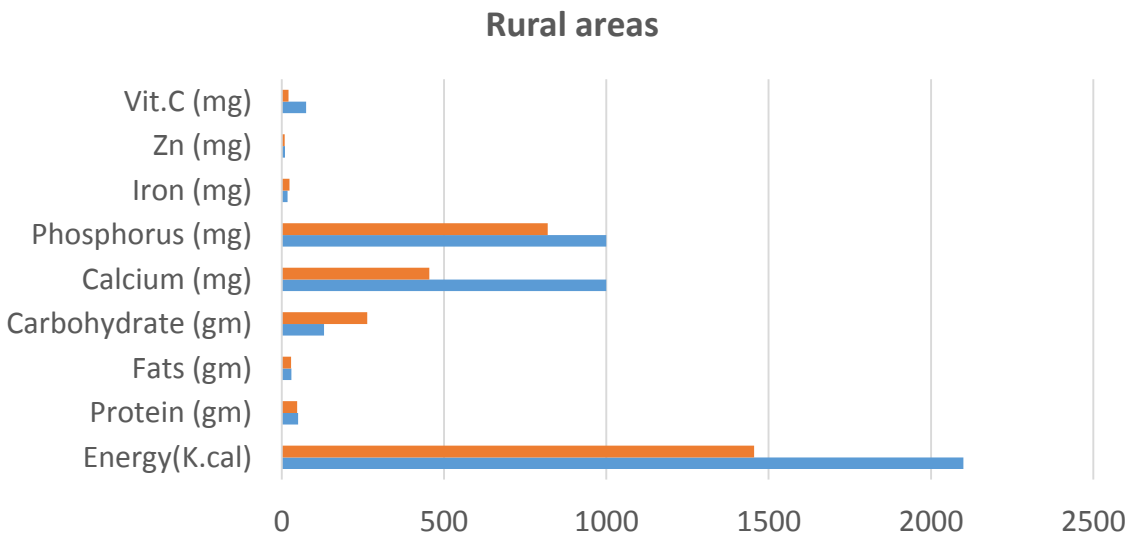



# Nutritional Intake among Women (24 hours food recall -official data)

Source: NNS 2010-11



# Undernourished Females – Implications for Future Generation (World Bank Study, 2006)

- A malnourished woman is at higher risk of giving birth to an anemic or an underweight child (less than 2.5 kg)
- Such children have five times the risk of death in the first year and a high risk of growth failure during childhood
- Low birth weight may result in greater chronic diseases as an adult
- Severe iron deficiency anemia causes deaths during pregnancy and childbirth
- Iodine deficiency in pregnancy causes the birth of mentally impaired children
- Human and economic potential can be at risk by malnutrition

# For Pakistan Malnutrition Results in:

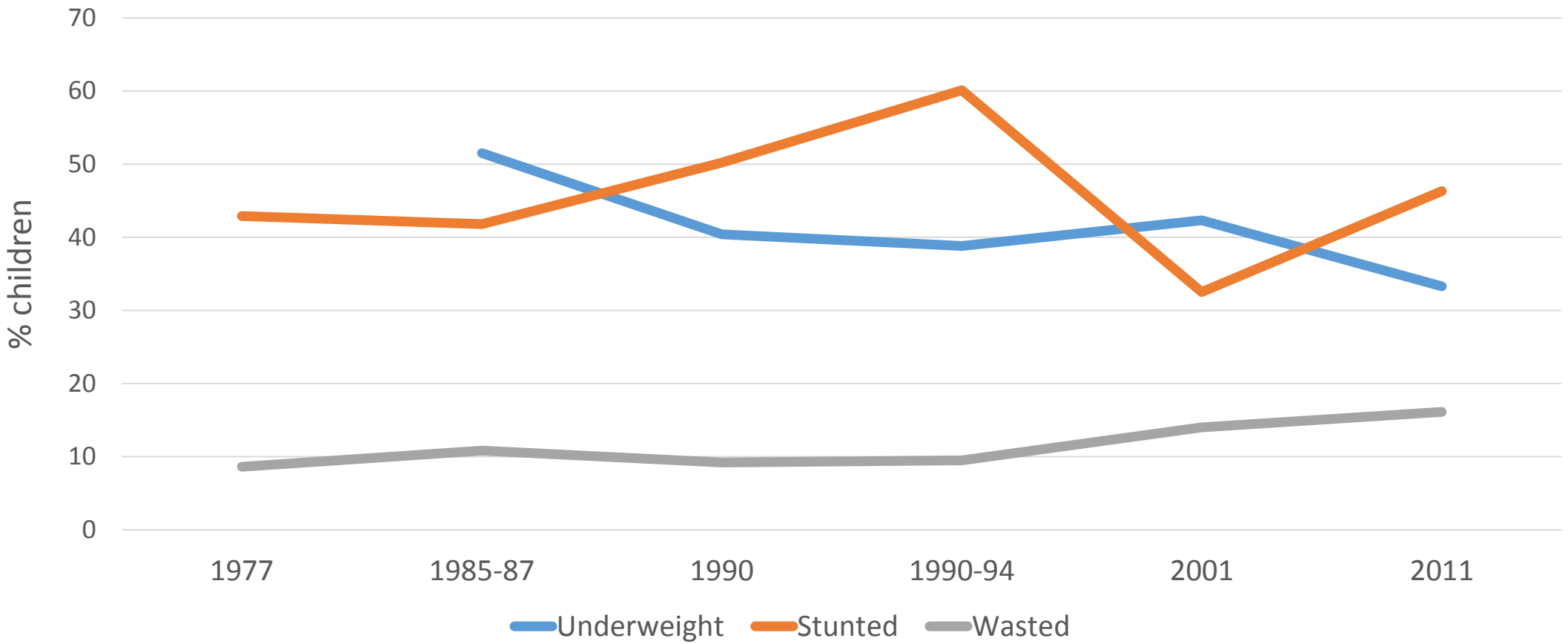
- Child mortality
  - Low birth-weight babies (31.6% of live births in 2007) rank 3rd in 183 countries
  - Under five mortality rate (89 per 1000 live births, 2008-2012)
  - Infant mortality rate (74 per 1000 live births, 2008-2012)
  - Neonatal mortality rate (55 per 1000 live births, 2008-2012)
- Disability
  - About 2.65 % population was disabled in 2012 (based on the projections on 1998 Census), 2.54% was in 1998
  - Of these, 43% are children (1-15 years)
  - Of total disabled, 8.2% are blind, 7.5% deaf, 14% mentally retarded, 8.3% have multiple disabilities
- Probability of falling sick, loss in work days and income

Source: PDHS 2012-13

Source: UNICEF, State of the World's Children, Childinfo, and Demographic and Health Surveys by ICF International

Source: Helping Hands for Relief and Development (2012). Persons with Disabilities (PWDs) Statistics in Pakistan 2012

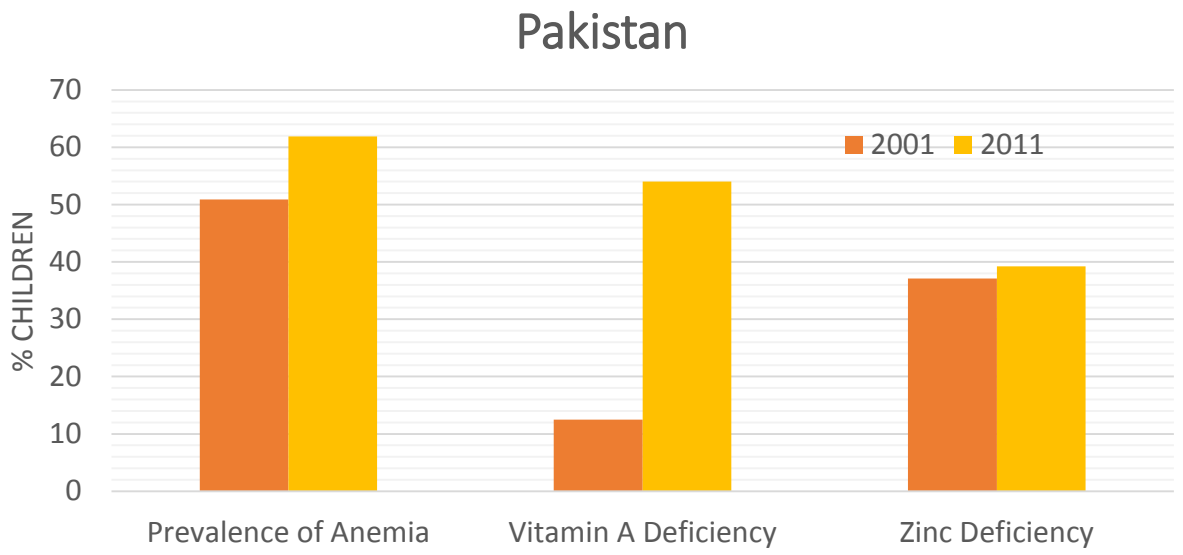
# Protein-Energy Malnutrition among Children official data (< 5 years of age - official data)

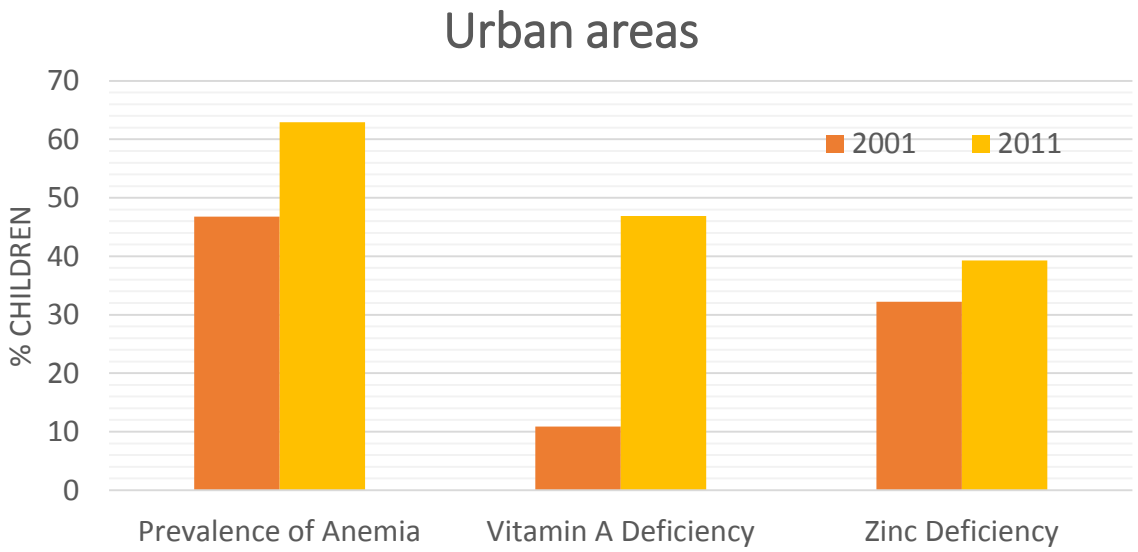


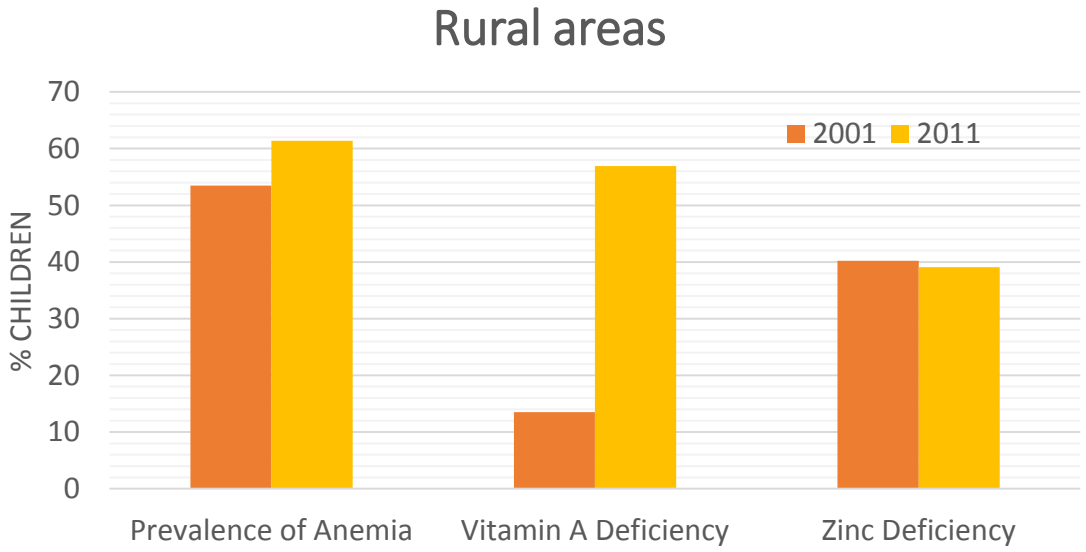

Source: NNS 2010-11

# Micronutrient Deficiency among Children (2001-2011 - official data)

Source: NNS 2010-11



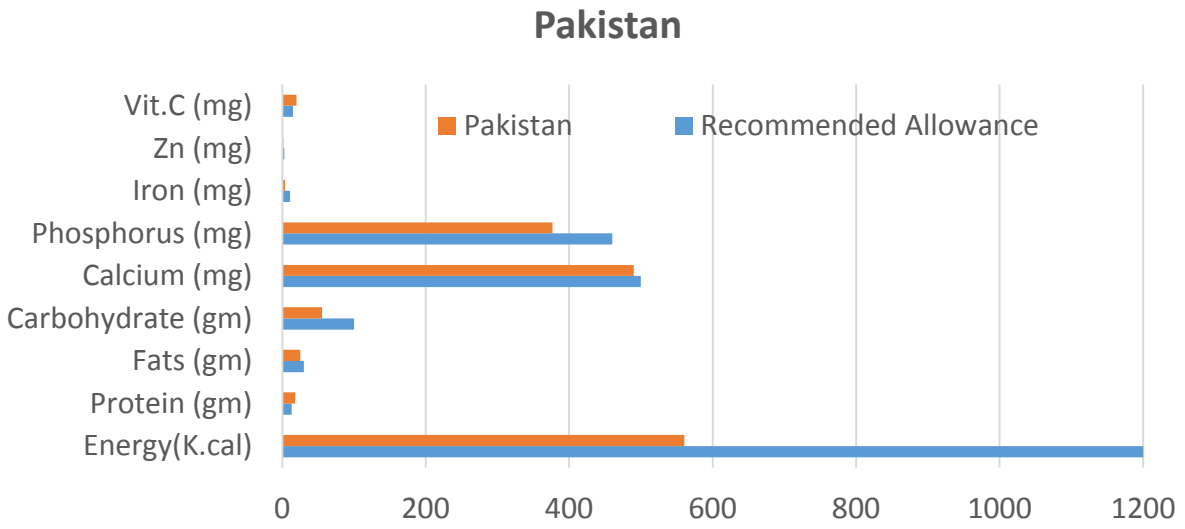



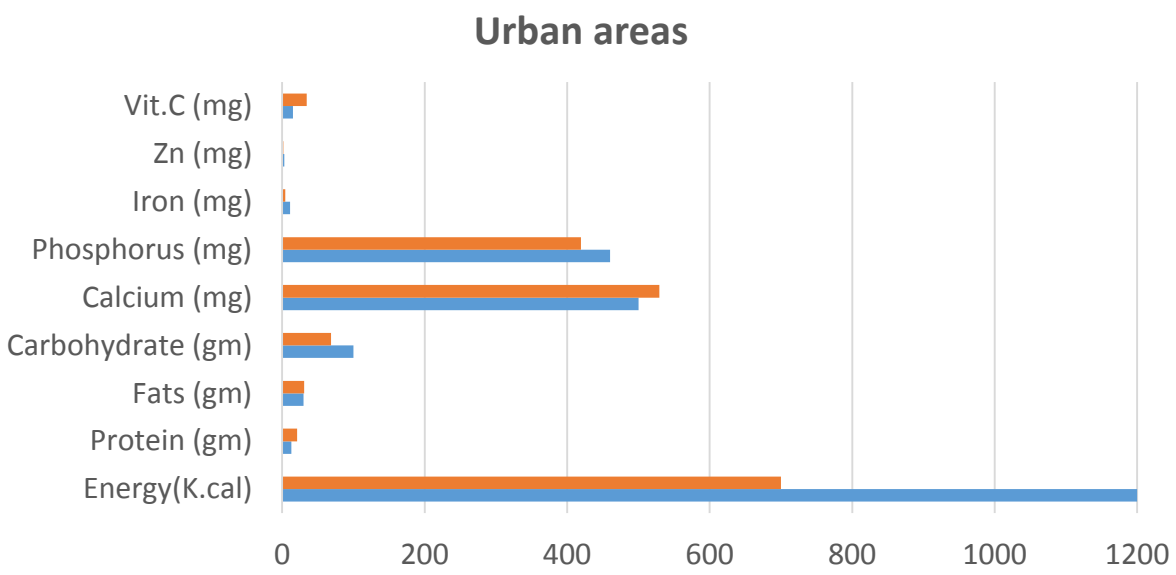



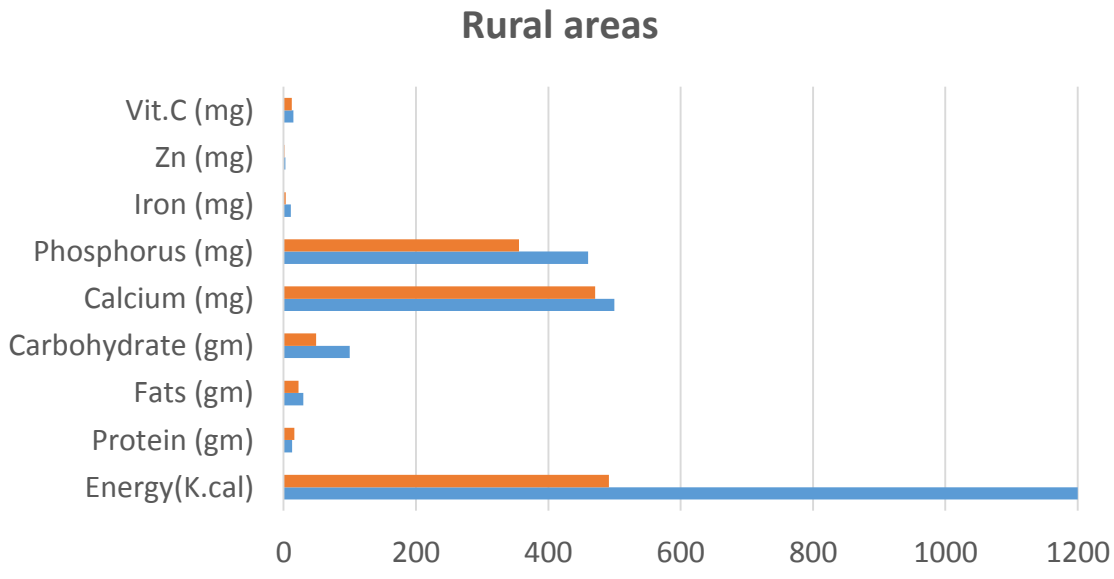
# Nutritional Intake among Children 0-23 months

## (24 hours food recall - official data)

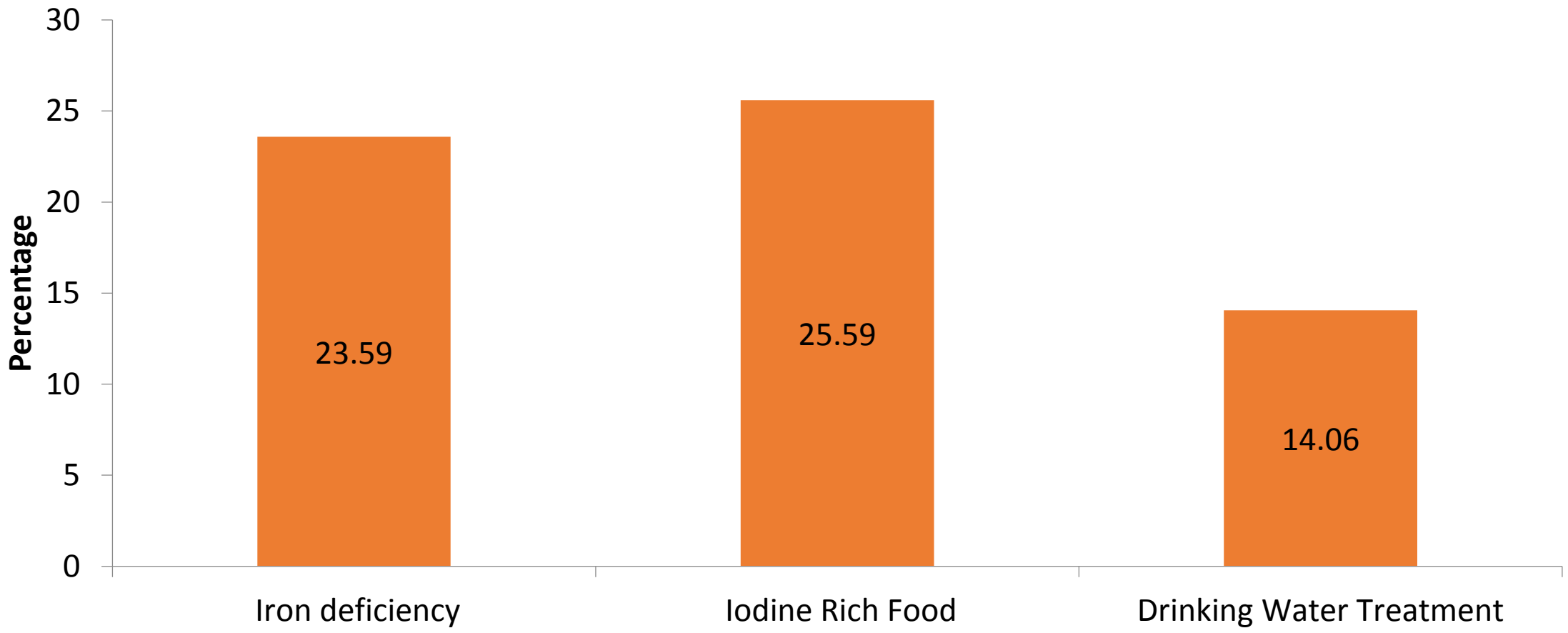
Source: NNS 2010-11



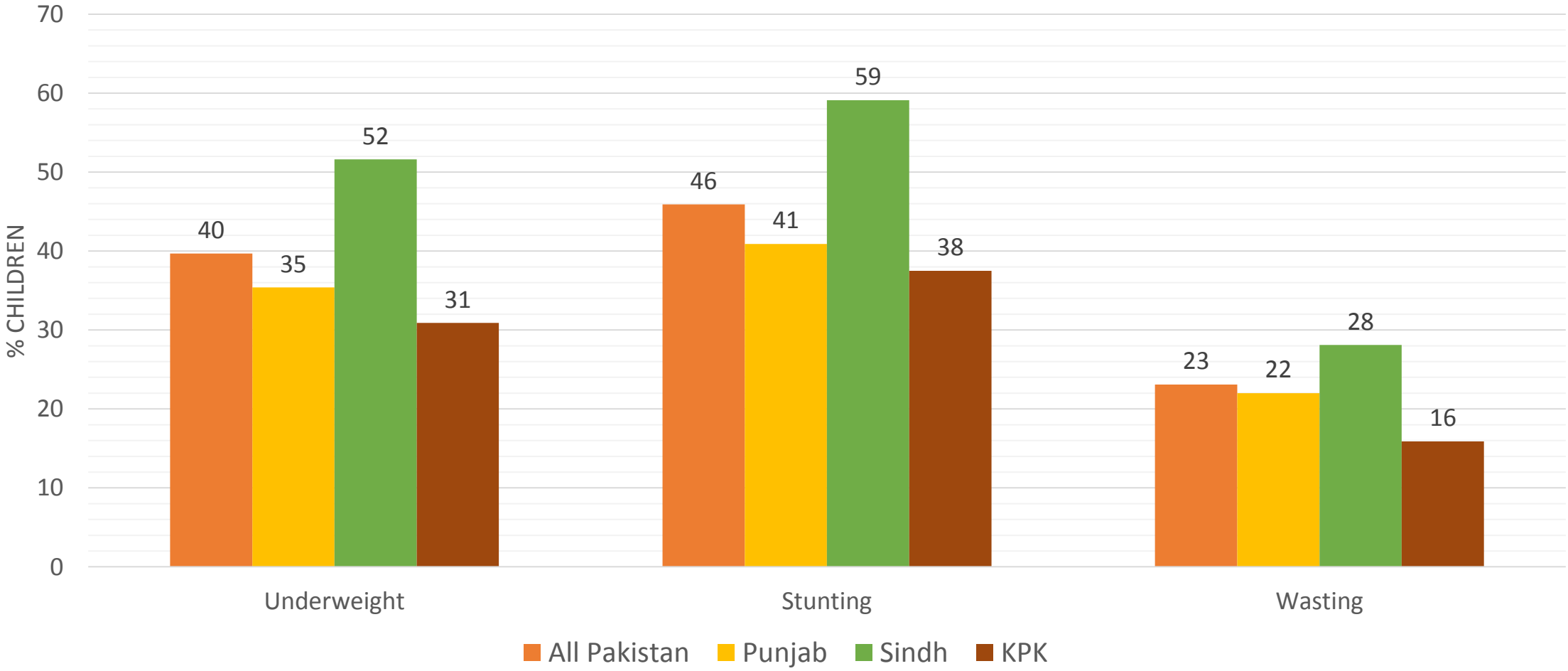



# Low Levels of Mothers' Knowledge about Child Nutrition (PSSP data)



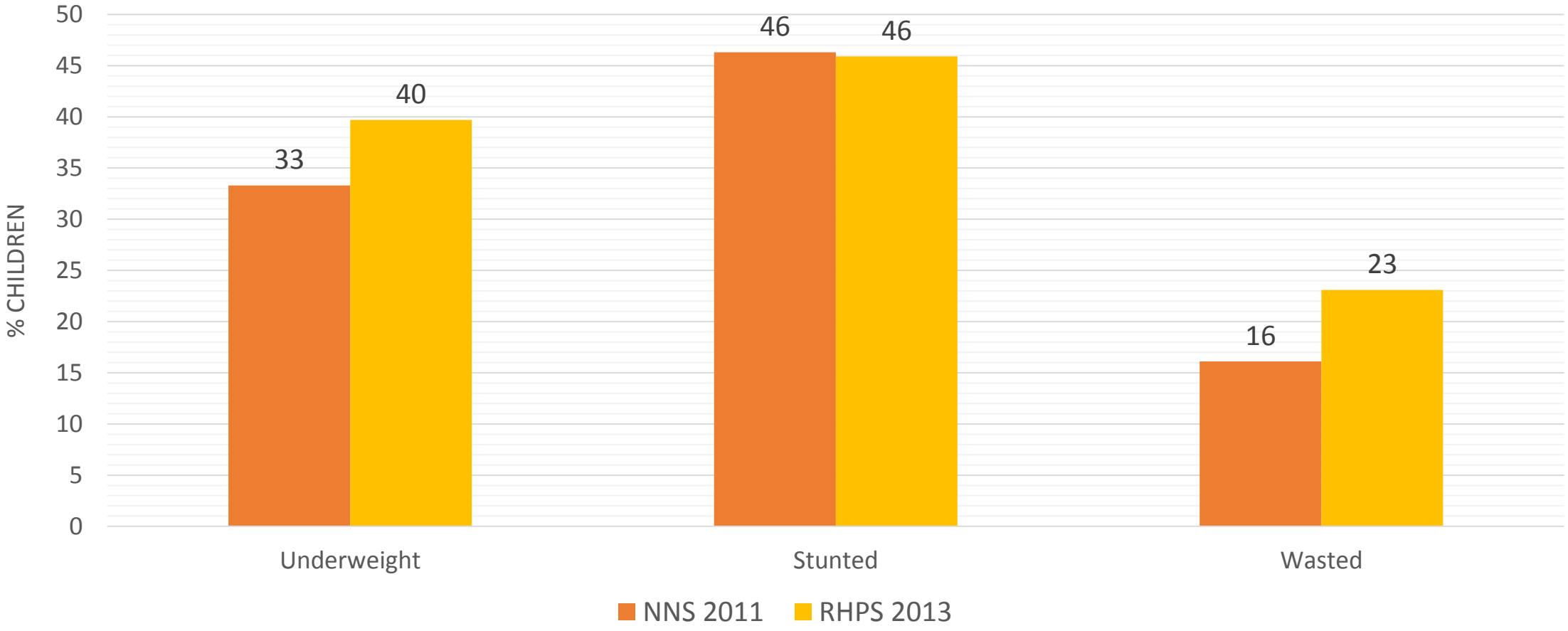

Source: RHPS (2012)

# High and Variable Prevalence of Malnutrition (<–2SD) by Province and Rural Pakistan (2013 - PSSP Study)




Source: Shahzad et al. (2013)

# Comparison of malnourished children in NNS 2011 and RHPS 2013 (PSSP Study)




Source: Shahzad et al. (2013)

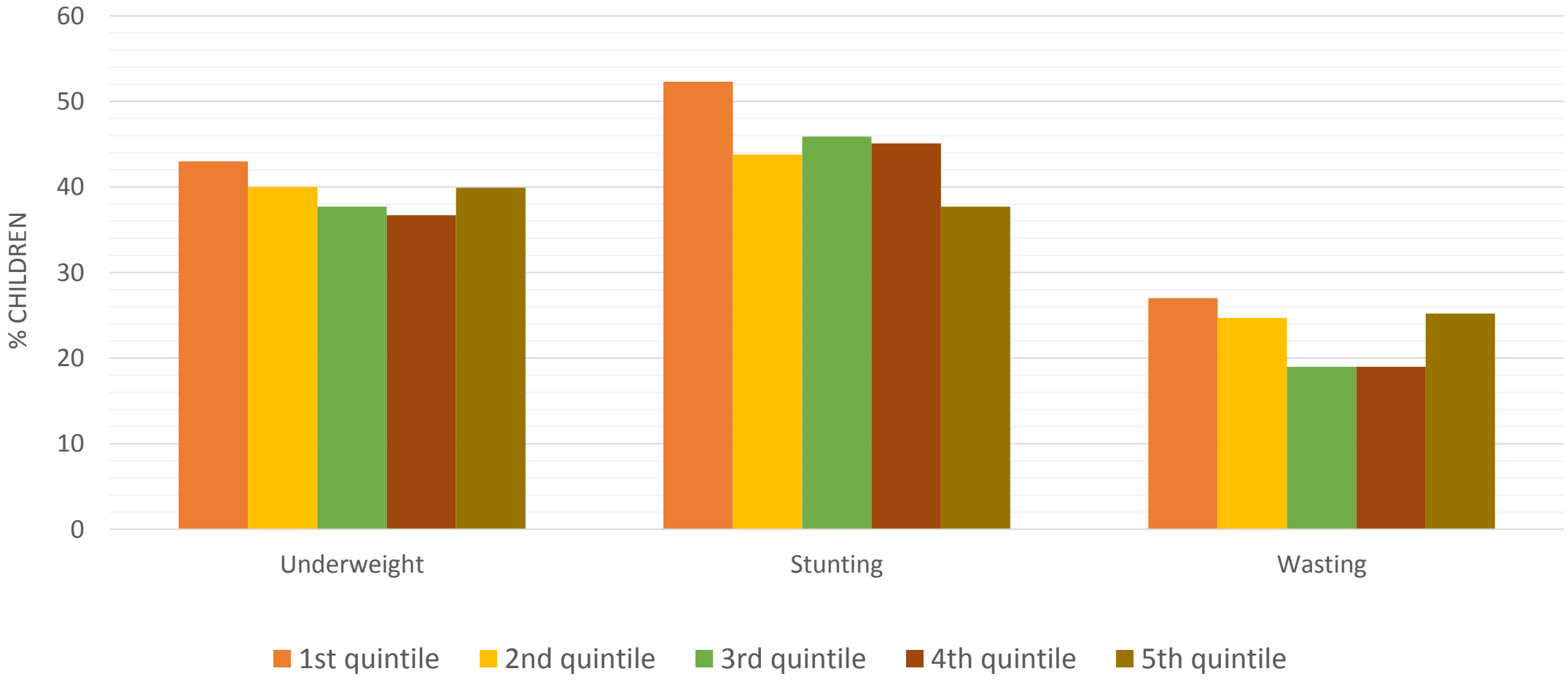
# Logistic Regression Analysis (PSSP Study)

- ***Dependent variables***: HAZ, WAZ, WHZ
  - ❖=1 if malnourished (z-score <-2), 0 otherwise
- ***Child characteristics:*** *age and gender*
- ***Mother Characteristics:*** *age at child birth, literacy*
- ***Household characteristics:*** *number of siblings, nuclear family,* farm household, flush toilet, and poverty status
- ***Community characteristics:*** *distance from BHU, LHV/LHW*
- ***Location characteristics:*** *Sindh and KPK*

# Results of Logistic Regression (PSSP Study)

- Incidence of malnutrition among children under five is highest in Sindh
- Improving hygienic conditions appear important to reduce long term malnutrition (toilet facility and safe drinking water)
- Access to health care services plays a significant role in reducing the short-term nutrition (LHW)
- Mother's education improves the general state of nutrition among children under five

# And child malnutrition is high across all expenditure quintiles (PSSP Study)




Source: Shahzad et al. (2013)

# Results Indicate the Need for:

- Identification of malnourished population based on scientific method (mapping exercise)
  - Strong and accessible database for analysis; consistency in measuring indicators
- Moving towards nutrition-sensitive agriculture
  - Agricultural value chain
  - Kitchen gardening
  - Better storage facilities/techniques for agricultural products
  - Improved infrastructure and well functioning institutions (credit, marketing, etc)
  - Fortification and bio-fortification
- Creating awareness about nutritious diet (in schools and homes through media)
- Role of local institutions (e.g., LHW)
- Strengthen PINS and SUN through appropriate monitoring and evaluation

# Malnutrition better indicator of Poverty

- Overall levels of poverty are high and calorie consumption is low across the board
- Children in all expenditure categories are equally affected
- Average calories intake of 80 percent households (bottom 4 quintiles) is 2211 when recommended allowance is 2350 calories
- Poverty and malnutrition are determined by the same variables
- Malnutrition indicators are often used as a proxy for poverty in international studies (Reinhard and Wijayaratne, 2002; Setboonsarng, 2005; Heltberg, 2009; Klaver. 2010)
- United Nation's Millennium Development Goals first goal "eradicate extreme poverty and hunger." Undernourishment and malnutrition are amongst the indicators for this goal

# Malnutrition better indicator of Poverty (contd.)

- Nutritional Status is a more direct measure of the welfare of a people
  - It can be measured directly and in physical terms
  - not indirectly and through assumption based analysis such as those for money-metric measures of poverty which have proved very controversial in Pakistan

# Summing up

- **High prevalence of malnutrition in the country**:
  - **Poverty** - Lack of resources at the household level to maintain the minimum daily allowance of essential nutrients; and
  - **Lack of awareness** about balanced diet and maintaining good health
- Focus of previous research on estimating numbers only
- **Food Security not fully understood or integrated into policies**
  - Little work on understanding the linkages between food security, consumption behavior and nutritional outcomes and variations across socio-economic groups and regions
- **Need re-prioritization and evaluation of any previous policies and programs**

# Summing up

- **Limited Dietary Diversity**: Cereals, fats, sugars, and dairy products are the main sources of calories and macro-nutrients
- **The consumption of micronutrient rich foods is very low** (vegetables and fruits)
- **Average calorie consumption is lower than the recommended level** of 2350 and unbalanced in terms of micro-nutrients
- **Wheat is the main source of calories, carbohydrate and fiber**
- **Current policy focused on availability of wheat tonnage** through production and import. Little diversification away from four major crops.
- **Lesser focus on accessibility, sustainability and safety**.
- **Wheat consumption is price inelastic** (implications for dietary diversity and household expenditures on education, health care, etc.?)

# Implications for Poverty Reduction

- Addressing this alarming situation requires:

1. Urgent development and implementation of appropriate **multi-dimensional policies** for poverty reduction emphasising Food Security (with greater emphasis on access and utilization aspects), education (especially female), health and nutrition
2. More urgent **awareness building** about the gravity of the situation.

# Some Comments on the Multidimensional Poverty Index

# Pakistan is in the process of adopting a Multidimensional Poverty Index – this is an adapted and expanded version of the UNDPs Human Development Index

**The MPI is the product of two components:**

- **Incidence:** the percentage of people who are poor (or the headcount ratio, **H**);
- **Intensity:** the average share of indicators in which poor people are deprived (**A**).

$$\mathbf{MPI = H \times A}$$

# Indicators of Multidimensional Poverty Index and Weights assigned to them

| Dimension | Indicator | Deprived if…. | Relative Weight |
|---|---|---|---|
| Education | Years of Schooling | No household member has completed five years of schooling. | 1/6 |
| | Child School Attendance | Any school-aged child is not attending school up to the age at which they would complete class 8. | 1/6 |
| Health | Child Mortality | Any child has died in the household. | 1/6 |
| | Nutrition | Any adult or child for whom there is nutritional information is malnourished. | 1/6 |
| Living Standard | Electricity | The household has no electricity. | 1/18 |
| | Improved Sanitation | The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households. | 1/18 |
| | Safe Drinking Water | Water The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip. | 1/18 |
| | Flooring | The household has a dirt, sand or dung floor | 1/18 |
| | Cooking Fuel | The household cooks with dung, wood or charcoal. | 1/18 |
| | Assets | The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck. | 1/18 |

# Multiplicity of available data sources with very variable quality

- Demographic and Health Surveys
- Multiple Indicator Cluster Survey
- Household Income and Economic Surveys
- WHO Health Surveys

PLEASE FOCUS ON THE HUGE VARIABILITY IN NUTRION ESTIMATES FROM THREE DIFFRERENT SURVEYS IN 2001 IN THE NEXT SLIDE

# Pakistan's available data leave much to be desired Levels of Malnutrition in Pakistan (1976 to 2013)

| Data source | Percent Underweight | Percent Stunted | Percent Wasted |
|---|---|---|---|
| MNS 1976 | - | 42.9 | 8.6 |
| MNS 1985 | 51.5 | 41.8 | 10.8 |
| PDHS 1990 | 40.4 | 50.2 | 9.2 |
| NNS 1998 | 38.8 | 60.1 | 9.5 |
| NNS 2001 | 42.3 | 32.5 | 11.2 |
| PSES 2001 | 51.4 | 52.7 | - |
| PRHS 2001 | 56.6 | 64.4 | 18.4 |
| PPHS 2010 | 39.8 | 64.5 | 17.2 |
| NNS 2011 | 33.3 | 46.3 | 16.1 |
| | | | |

# Why Not a Happiness Index for Pakistan?

- Economic Wellness:
- Environmental Wellness:
- Physical Wellness
- Mental Wellness:
- Workplace Wellness:
- Social Wellness
- Political Wellness

# Why is Pakistan not using the available BISP Poverty Scorecard Indicators Data – it has all the multidimensional information needed

- **Demographics**
  - Number of dependents – (age Less than 18 or greater than 65 and above)
- **Education**
  - Head education
  - The number of children from 5 to 16 years old currently attending to the school
- **Household Characteristics**
  - Room ratio
  - Kind of toilet
- **Assets**
  - At least one refrigerator, freezer or washing machine
  - At least one air conditioner, air cooler, geyser or heater
  - At least one cooking stove, cooking range or microwave oven
  - At least one TV
  - One car or one car with one moto
  - One moto (but no car)
  - One buffalo or bullock and at least one cow or goat or sheep
  - Neither buffalo, bullock nor cow, goat or sheep
  - Some agricultural land but less or equal than 12.5 acres
  - More than 12.5 acres of agricultural land

# Pakistan Needs

- Simple Robust Real Time Measures
- Comparable over time and Space to capture changes over time and vast disparities across space.
- Minimal Data Requirements
- Easily Understood and applicable Methodology
- Confidence in the Measures

Thank you so much