



Affordability of nutritious diets in rural India

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Motivation

- India accounts for one-third of global stunting and has extremely high rates of maternal and child anemia and underweight
- Many explanations, but very little focus on the affordability of nutritious diets
- We use district-level data on food prices and wages to ask:
 - What is the Cost of Recommended Diets (CoRD), and how does this vary across time?
 - How does the affordability of the recommended diet change by gender and over the period of our data?

Methods

- We use the **Cost of Recommended Diet (CoRD)** measure
- This measure calculates the minimum cost of meeting country-specific food-based dietary guidelines (FBDGs)
 - greater policy relevance and acceptance by government agencies
- India's FBDG specifies a set of food groups, and recommends portion size and number of portions for each
 - Total of six food groups: starchy staples, proteins (pulses + meats), dairy, vegetables, fruit, oils and fats
 - At least one dark green leafy vegetable to be included
 - Allows for a lacto-vegetarian diet
- We add in information on wages to assess how the affordability of diets has changed over time
 - Use wages of *unskilled labourers* as a good proxy for income of the poor

Food-based dietary guidelines

- India's FBDG is unique in prescribing different serving sizes by gender and by intensity of physical activity
- We classified unskilled labour as 'moderate' physical activity
- Differences across genders in cereals, pulses and oils and fats
- We use these to estimate Cost of Recommended Diet separately for men and women

Balanced Diet for Adults - Sedentary/ Moderate/ Heavy Activity
(Number of portions)

	g/portion	Type of work					
		Sedentary		Moderate		Heavy	
		Man	Woman	Man	Woman	Man	Woman
No. of portions							
Cereals & millets	30	12.5	9	15	11	20	16
Pulses	30	2.5	2	3	2.5	4	3
Milk & milk products	100 ml	3	3	3	3	3	3
Roots & tubers	100	2	2	2	2	2	2
Green leafy vegetables	100	1	1	1	1	1	1
Other vegetables	100	2	2	2	2	2	2
Fruits	100	1	1	1	1	1	1
Sugar	5	4	4	6	6	11	9
Fat	5	5	4	6	5	8	6

Source: Dietary Guidelines for Indians – A Manual, National Institute for Nutrition, ICMR



Data

I. Data on **prices** and **wages** comes from the National Sample Survey (NSS) Rural Price and Wage data collected by the Ministry of Statistics and Programme Implementation

- **Time-span:** October 2001-June 2011 (but October 2007-June 2009 missing)
- **Geography:** 24 states, 380 districts
- **Price data:** covers 101 items/commodities
- **Wage data:** Covers a total of 18 different occupations (we use one!)

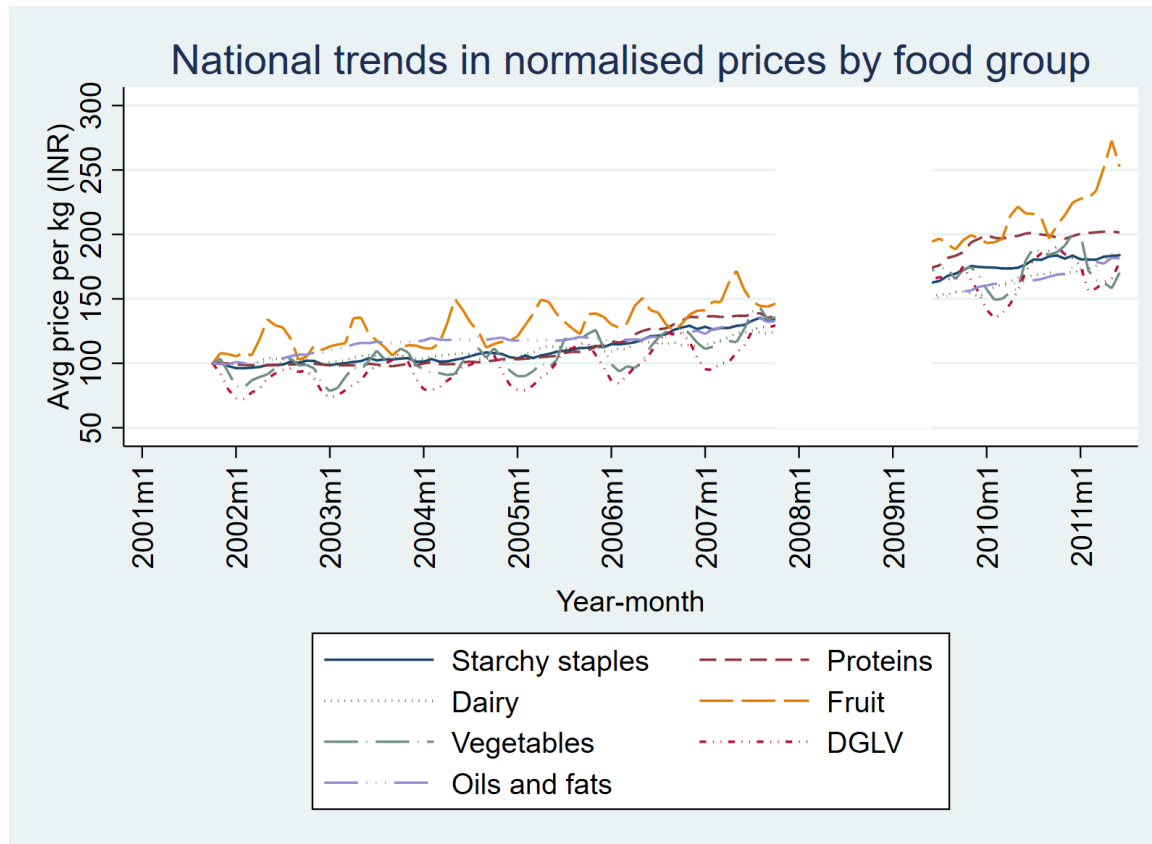
II. Other data

- Data on state domestic product from the Reserve Bank of India (RBI)
- Data on Consumer Price Index (CPI) for agricultural labourers, used to deflate nominal price and wage series

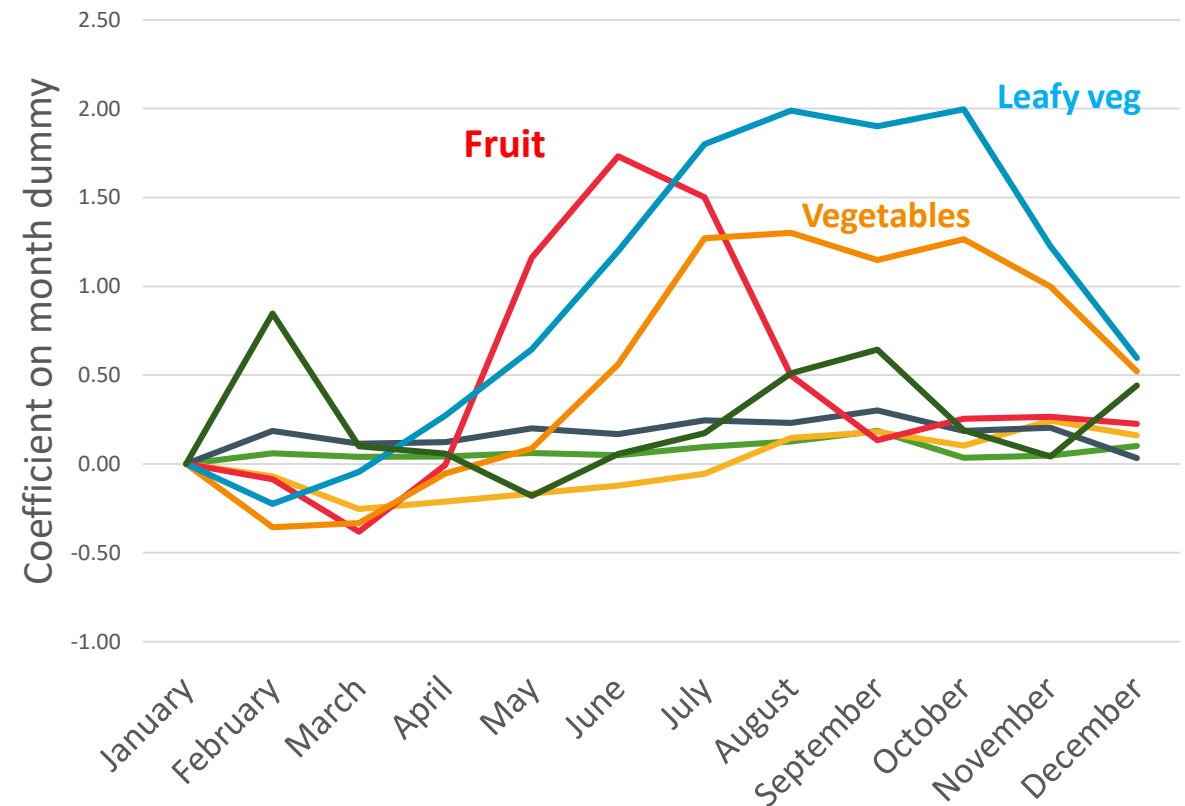
What is the cost of a recommended diet, and how does this vary across time?

Trends in prices over time

Nominal prices have increased ; lots of variation by food group and across months



A. Nominal prices per kg

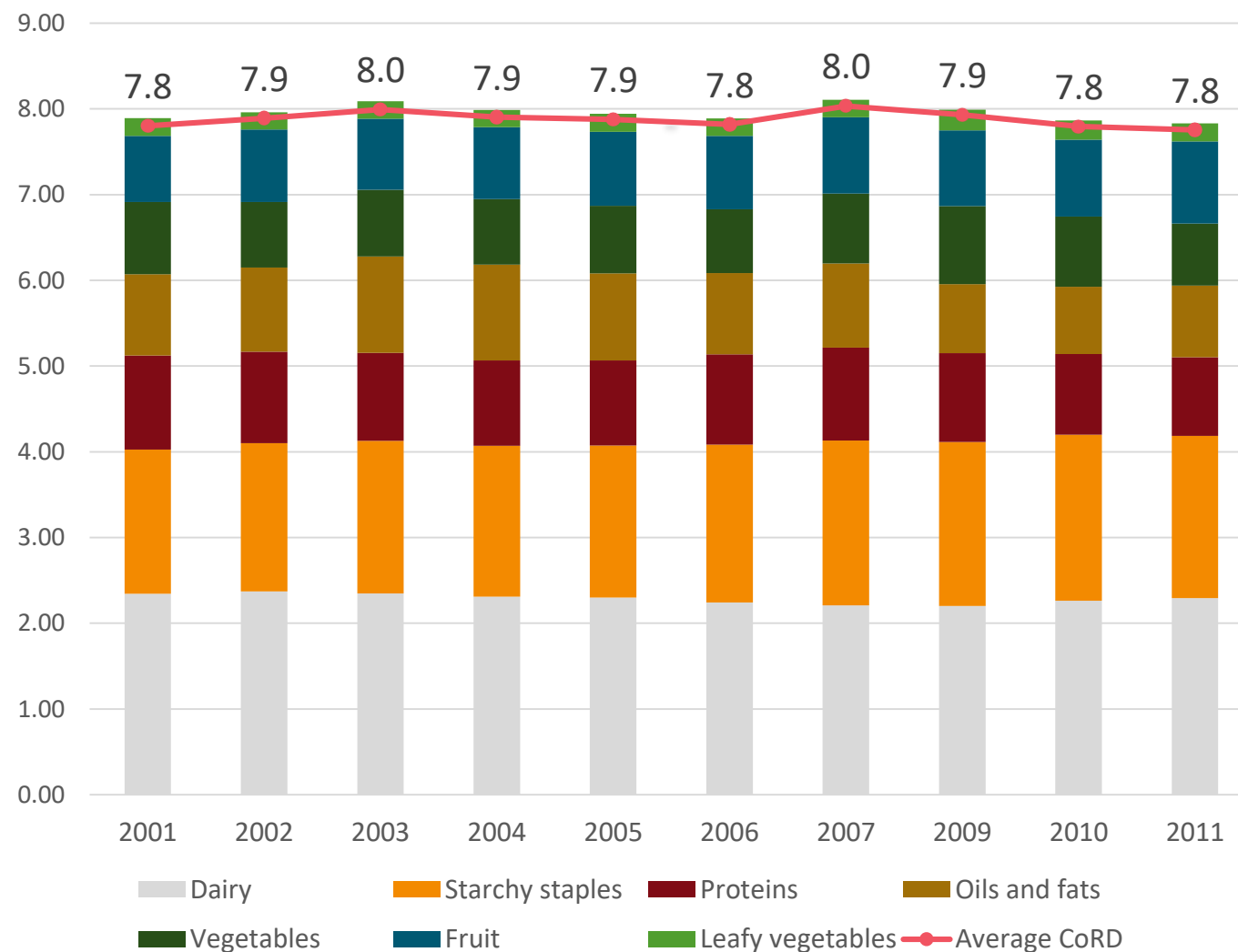


B. Seasonality

Description of and trends in Cost of Recommended Diet

Diets are realistic; CoRD has remained fairly constant over time

	Servings	Common cheap items
Starchy staples	9-20	Maize, Millet, Rice, Wheat, Bread
Proteins	2-4	Peas, Gram, Pea dal, Khesari dal
Dairy	3	Milk (cow), Milk (buffalo), Curd
Fruit	1	Banana, Guava, Papaya, Pineapple
Vegetables	2	Radish, Onion, Gourd, Pumpkin
Dark green leafy veg	1	Palak, Bhaji sag leaves, Amranth
Oils and fats	4-8	Mustard, Groundnut, Palm

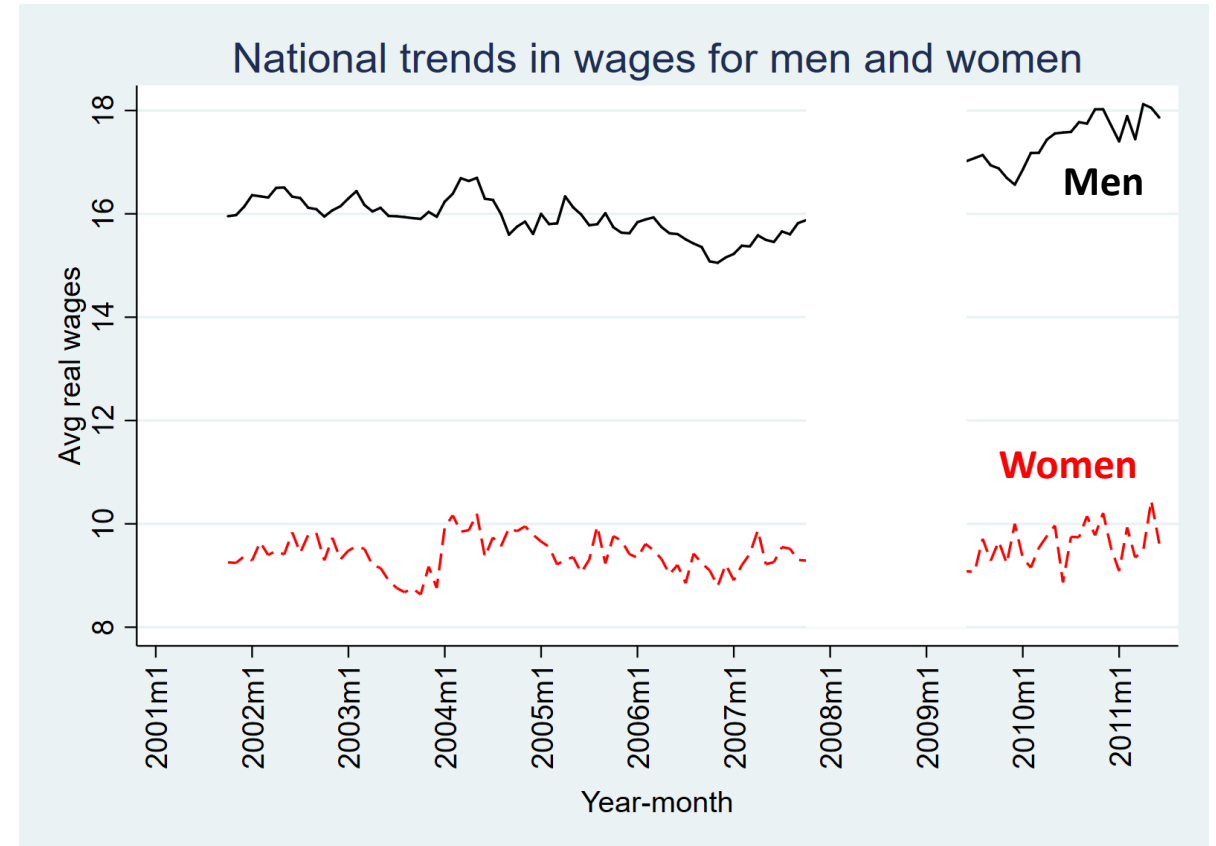
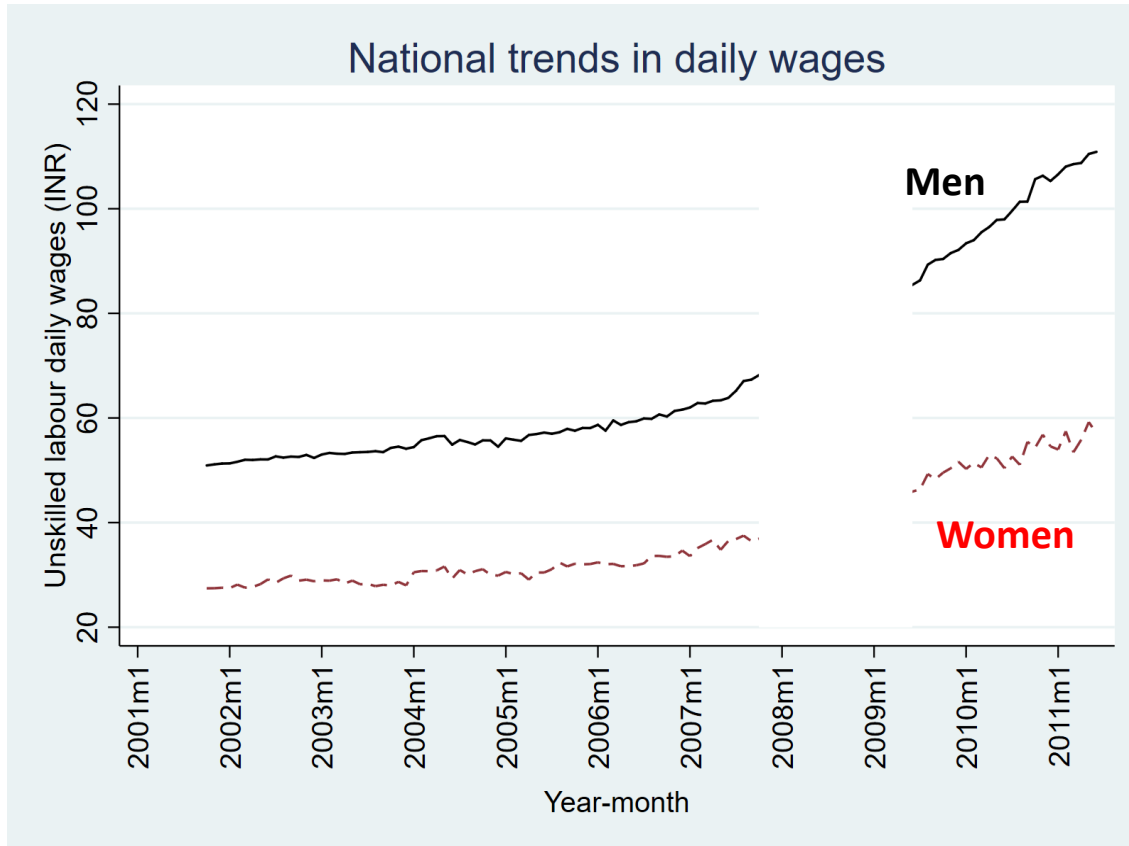


Least-cost diets based on India's FBDG

How did the affordability of the recommended diet change by gender and over the period of our data?

Trends in wages for men and women

Nominal wages for women a LOT lower than for men ; slight increase in real wages

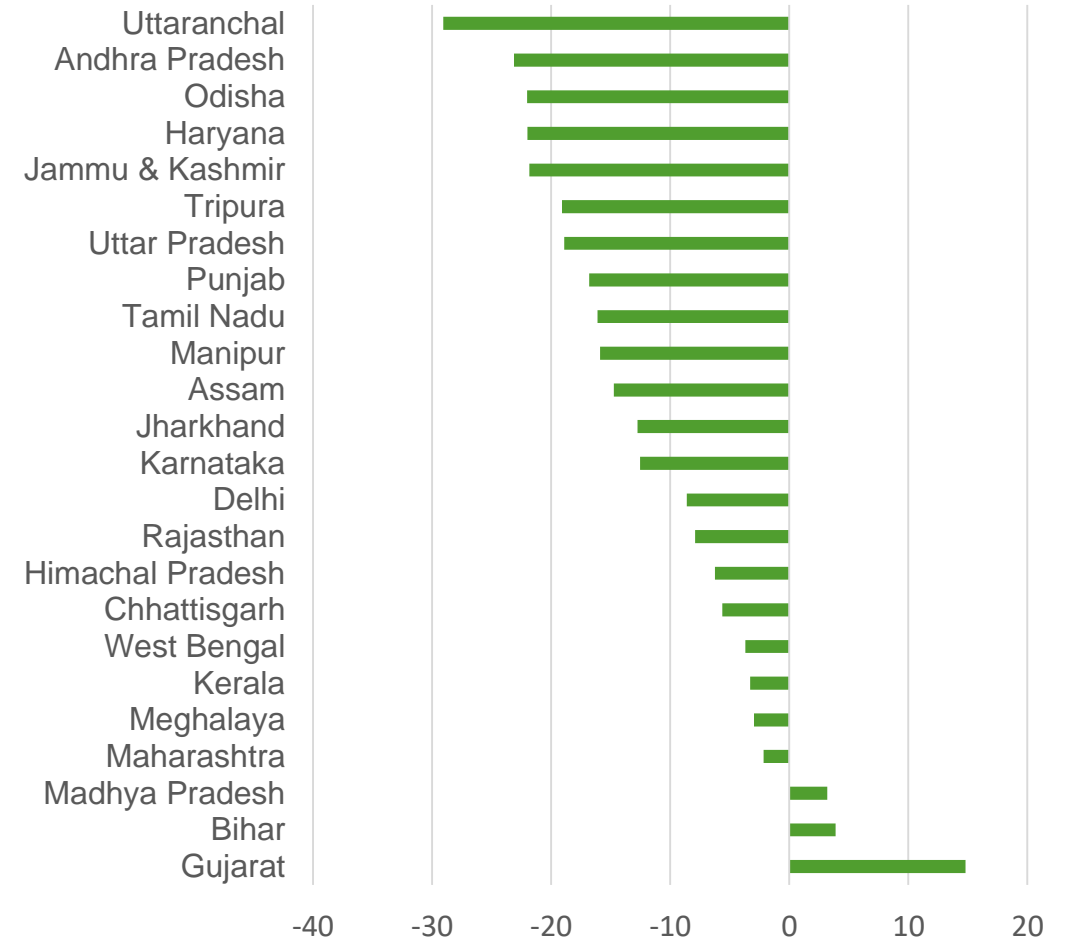
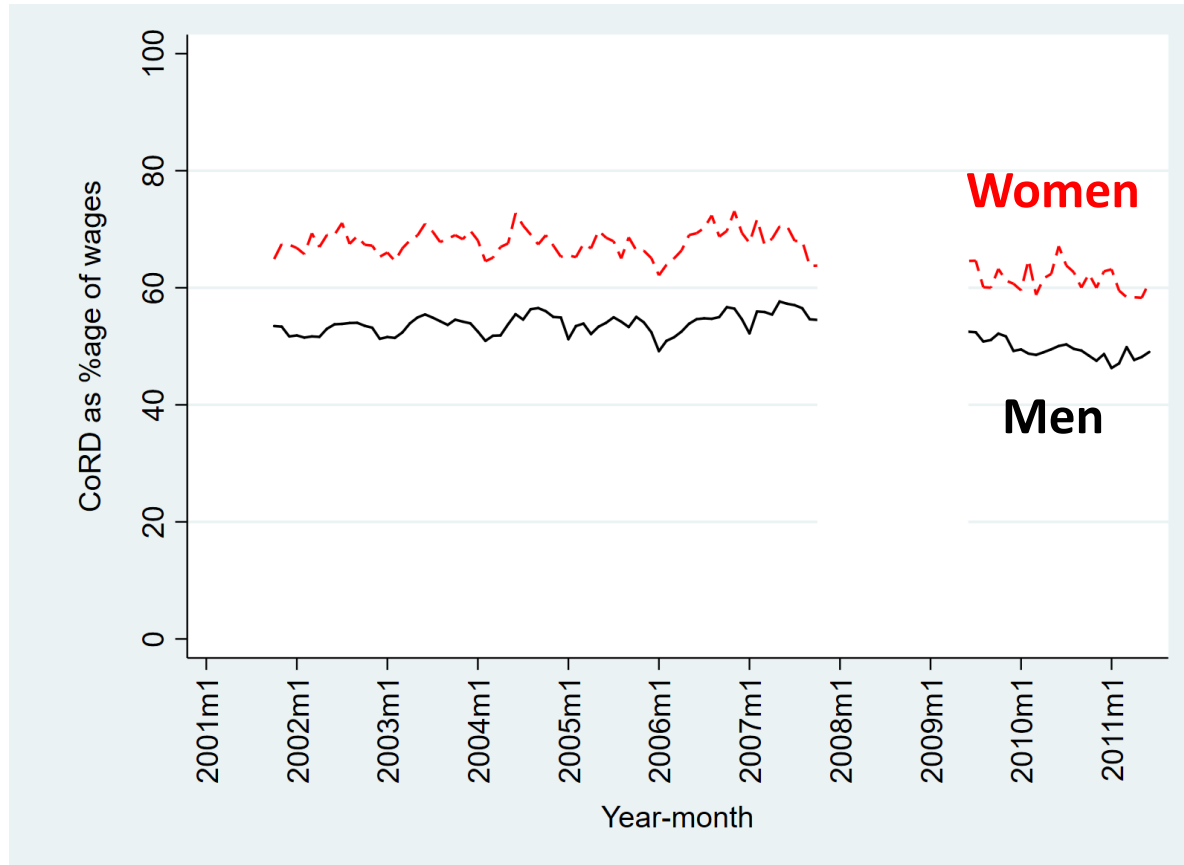


Nominal wages for men increased from about 2007 onwards; more for men than for women

Real wages quite volatile, have increased more for men

Temporal and spatial trends in affordability of recommended diets

Affordability has improved slightly over time; lots of state-wise variation



Large and persistent gap between cost of diet relative to wages even with gender-specific #servings

Change in CoRD relative to wages, 2001 to 2011

Conclusions

- Prices are seasonal, however seasonality occurs at different times for different food groups
 - The greatest seasonality is in fruits and vegetables
 - Overall both prices and wages have risen over time, more change for wages for men than women
 - The cost of a recommended diet has remained remarkably stable
 - This means affordability has improved, BUT
 - Does not take into account family size or preferences
 - Still costs about half of men's daily wages and 70-80% of women's
- The recommended diet is highly unaffordable despite improvements!

Next steps

- Work with a different food price dataset for the period 2004-2018
 - Mandi-level (marketplace) price data on a weekly frequency
 - Collected by the Ministry of Agriculture & Farmers' Welfare
- Then, to look at the link between the affordability of diets and nutrition indicators from the 2015-16 National Family Health Survey (NFHS), especially consumption of nutrient-rich foods by mothers and children

Acknowledgements

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- <http://sites.tufts.edu/candasa>