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Nutritional Intake and Consumption Pattern in the States of Himachal Pradesh and Meghalaya

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Abstract

According to the recent reports of the National Sample Survey Organisation (NSSO) on nutritional intake, Meghalaya reported the lowest intake of dietary energy and protein per capita per diem whereas Himachal Pradesh reported the highest intake. These two small hilly states are similar in several aspects but they are at each end of the spectrum in terms of nutritional intake. Using the NSSO data on consumer expenditure in 2004-05 and 2011-12, the paper analyses the consumption pattern of the people in Himachal Pradesh and Meghalaya.

Keywords: Calorie intake, Consumption pattern, Himachal Pradesh, Meghalaya

Introduction

Food is one of the basic needs of human beings. Information on intake levels of nutrients is important in order to understand the general health status and level of living of the people. Further, monitoring the nutritional intake of people in developing economies is essential since substantial sections of the population cannot meet their dietary requirements on account of poverty. Moreover, cultural and traditional factors also play a role in food consumption. Thus, awareness of any widespread deficiency is necessary for informed and appropriate policy measures.

There are wide interstate variations in nutritional intake in India. According to the 68th round of National Sample Survey on Consumer Expenditure conducted in 2011-12, in case of per capita per diem intake of

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calories and protein, Meghalaya reported the lowest intake whereasHimachal Pradesh reported the highest intake. In respect of fat intake, Meghalaya ranked fourth from the bottom and Himachal Pradesh occupied the fourth position from the topafter Punjab, Haryana and Delhi [NSSO (2014), pp. A-73 – A-108].

Himachal Pradesh is a state in Northern India covering an area of over 55,670 square kilometres. As per the 2011 Census it has a population of 68,64,602. It is the least urbanised state in the country with 90 percent of the population living in the rural areas. It is also considered as the second least corrupt state in the country after Kerala. The main occupation of the people is agriculture with 93 percent of its population depending on it for their livelihood. It contributes about 45 percent to the State Domestic Product. The main crops grown here are wheat, maize, rice, barley, seed potato, ginger, vegetables, vegetable seeds, mushrooms, olives, figs, etc. Another main contributor to the state's economy is tourism. It is also a state that has a rich heritage of handicrafts. Himachal Pradesh is one of the few states that has remained untouched by other customs external to it mainly because of its difficult terrain. In their day-to-day diet, the people include lentils, rice and vegetables. Flours like wheat and maize are also used to make bread or *roti*.

Meghalaya is a state in the North-Eastern Region of India and covers an area of 22,429 square kilometres. As per the Census 2011, the state has a population of 29,66,889. About two-thirds of the total work force of the state is engaged in agriculture. The major crops grown here are potatoes, rice, maize, pineapples, bananas, papayas, spices, etc. However, the contribution of agriculture to the State Domestic Product is only about one-third. Meghalaya is also one of the tourist destinations that attract many tourists both national and international. It has beautiful landscapes, waterfalls, caves, sacred groves, etc. which are major tourist attractions and is many times compared to Scotland. The staple food of the people is rice which is eaten with different preparations of meat or fish and also vegetables. After meals, the people have a habit of consuming areca nuts along with betel leaves, lime and sometimes with dried tobacco.

Himachal Pradesh became a full-fledged state in 1971, and Meghalaya in 1972. Meghalaya's per capita Net State Domestic Product at current prices was Rs. 61,548 and that of Himachal Pradesh was Rs. 92,300 in 2013-14 (Government of India 2016a, p. A25). The all India per capita income in the same year was Rs. 74,380. Thus, Meghalaya has a lower than average

per capita income compared to Himachal Pradesh. Both are small hilly states in which the terrain is not suitable for modern and large scale cultivation of cereals. Both have huge potential for the cultivation of cash crops and fruits. Himachal Pradesh has harnessed this potential and is currently the 'apple state of India'.

Although the two states are similar in several aspects, Meghalaya lags behind in terms of the level of development. In particular it is intriguing to observe that the level of nutritional intake of Himachal Pradesh and Meghalaya are at each end of the spatial spectrum.This is the issue that this paper attempts to explore.

Data and Methodology

In this paper, we have used the unit record data collected by the National Sample Survey Organisation (NSSO) on Consumption Expenditure during the 61st round (July 2004 to June 2005) and 68th round, Schedule Type 1 (July 2011 to June 2012). The survey covers the entire country and over one lakh households were surveyed. In particular, for the Schedule Type 1 of the 68th round, 2041 households in Himachal Pradesh and 1259 households in Meghalaya were surveyed. The sample size for the 61st round is similar but slightly larger since the survey in this round was not divided into Type 1 and Type 2!.

Besides recording the household monthly expenditure, the schedule of enquiry used for the survey records quantities of various items of consumption, in particular, of each food item consumed by the household during the 30 days preceding the date of survey. The Consumption Expenditure datasets give the consumption of various items by the surveyed households. Information is also collected on whether meals were taken at home or not, and if not, whether the meals were taken from school, employer or purchased and consumed while away from home. The quantities of food recorded as consumed by the households are converted into the equivalent amounts of calorie, protein and fat on the basis of a Nutrition Chart, which gives the energy, protein and fat content per unit of different foods in the Indian diet. The Nutrition Chart is largely based on Gopalan *et. al.* (1991). It needs to be said, however, that the actual intake of nutrients depends on how these foods are actually processed and/or cooked in the surveyed households. We have used the nutrient contents of each item per unit of quantity as reported inpages 14-18 of NSSO 2014. We have also adjusted for outside meals and meals served to non-household members as per the methodology states in pages 9-10 of NSSO 2014.

The major components of food or nutrients are: carbohydrates, proteins, fats, vitamins and minerals. Proteins, fats and carbohydrates are mostly the energy yielding components of a diet. Proteins normally supply 10-12 per cent of energy in most diets; energy that carbohydrates and fats contribute may vary from diet to diet. Quantitative food requirements are usually estimated in terms of energy or calorie. The unit of measuring energy is kilocalories (Kcal) which is the amount of heat required to raise the temperature of one kg of water from 14.5°C to 15.5°C. We restrict our estimates of nutritional intake to intake of energy, protein and, fat and we have calculated the per capita per day intake of these nutrients.

We have calculated the per capita food expenditure and per capita total consumption expenditure in the last 30 days. Using these we have found the percentage of food expenditure out of total consumption expenditure for the two states. Further, we have studied the allocation of the food expenditure across various food groups in order to analyse the consumption pattern.The analysis has been done for the rural and urban sectors as well as for the all India level.

While examining the estimates of distribution of nutritional intake, information on food consumption was collected for a household as a whole. The per capita intake is derived by dividing the household intake by the number of household members without considering the composition of the household in terms of age, sex, occupation, etc. which are important factors in determining food consumption. Nevertheless, household per capita intake of nutrients is an important tool for analysis and for studying adequacy of dietary energy intake (NSSO 2014, p.21).

Nutritional Intake

The normative calorie consumption for Indians as given by the Indian Council of Medical Research (ICMR) differ according to gender, age group and types of activity. For a man weighing 60 kg and engaged in sedentary activities, the minimum daily calorie requirement is 2320 Kcal, for a similar man doing moderate physical activities, the norm is 2730 Kcal and for someone doing heavy physical activities, it is 3490 Kcal. For women weighing 55 kg the norms are 1900 Kcal, 2230 Kcal and 2850 Kcal respectively for those engaging in sedentary, moderate and heavy physical activities (ICMR 2010, p. 66). Therefore, on an average, the Planning Commission has recommended

2,400 Kcal for the rural areas and 2,100 Kcal in the urban areas as the minimum daily calorie consumption requirement per person (Government of India, 1993)[2]

The norm is 1770 Kcalfor Indians as recommended by the Food and Agriculture Organisation, (Government of India, 2009). However, this minimum threshold is determined with reference to light physical activity, normally associated with a sedentary lifestyle (FAO, 2015, p.51).These norms give us some benchmark in order to assess the adequacy of calorie intake although the actual requirement differs according to the age, sex, height and level of physical activity which we have no way to take into consideration from the consumption data. In Table 1 we have reported the per capita per diem intake of calories, proteins and fats in the rural and urban areas of Himachal Pradesh, Meghalaya and All India in 2004-05 and 2011-12.

Table 1

Average per capita per diem intake of calories, proteins and fats

State/	Himachal Pradesh			Meghalaya			All India		
Nutritional intake / Sector	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
2004-05									
Calorie (kcal)	2326	2389	2332	1900	1898	1900	2047	2020	2040
Protein (gm)	67.9	67.1	67.8	48.8	49.8	48.9	55.8	55.4	55.7
Fat (gm)	52.5	59.9	53.2	25.4	37.2	27	35.4	47.4	38.5
2011-12									
Calorie (kcal)	2502	2513	2503	1688	1757	1703	2101	2060	2089
Protein (gm)	71.4	70.7	71.4	41.7	46.1	42.6	56.5	55.7	56.3
Fat (gm)	59.3	66.4	60.1	21.5	27.7	22.8	41.7	52.5	44.8

Source: *Special tabulation by the authors using unit record data on Consumer Expenditure collected by the National Sample Survey Organisation in the 61st and 68th rounds.*

Calorie intake*:* In 2011-12 the average dietary energy intake per person per day was 2101 Kcal for rural India and 2060 Kcal for urban India. There has been a slight increase from the levels observed in 2004-05 in case of Himachal Pradesh and the all India average but we see a decline in the case of Meghalaya. One thing that strikes us is that Meghalaya is consuming less than the minimum calorie requirement of 1770 Kcal which is the FAO norm and also much lower than the normative calorie consumption as given by the ICMR.

Protein intake*:* The normative protein consumption for Indians as given by the ICMR differentiates between men and women. The recommended protein requirement for a man (weighing 60kg) is 60 grams per day and for a woman (weighing 50kg) is 50 grams per day (ICMR 2010, p.109). At the all India level protein intake per day was about 56.5 grams per capita in the rural areas and 55.7 grams per capita in the urban areas in 2011-12. As noted earlier, the average intake is the highest in Himachal Pradesh and the lowest in Meghalaya among all the Indian states. The protein intake has increased for Himachal Pradesh and the all India average. On the other hand, consumption of protein in Meghalaya falls short of the normative requirement and has declined during the period 2004-05 to 2011-12.

Fat intake*:* The normative fat consumption for Indians as given by the ICMR recommends 20 grams per day for a man weighing 60kg as well as for a woman weighing 50kg (ICMR 2010, p.132). Average fat intake for the country as a whole per capita per day was about 41.6 grams in the rural sector and 52.5 grams in the urban sector. The observed fat intake is marginally higher than the norm in Meghalaya and much higher in Himachal Pradesh. Just as in case of dietary energy and proteins the consumption has declined in case of Meghalaya and risen in case of Himachal Pradesh during the period that is considered in this paper.

Food consumption pattern

In this section we look at the average expenditure on food and the percentage of food expenses out of the total expenditure. Further, we look at the percentage distribution of the food expenditure over food groups.

***Food consumption expenditure*:** Table 2 reports the monthly per capita food expenditure and the total expenditure in absolute terms. It also gives the estimated proportion of food expenses out of the total expenses. In 2004-05 the per capita food consumption in both the states have higher values than the all India average of Rs 430/. We also notice that there seems to be

hardly any difference between the values recorded in the two states, with Himachal Pradesh having per capita food consumption expenditure of Rs 499/- and Meghalaya at Rs 498/-. On the other hand, when we look at the data of 2011-12 we find that once again both the states have higher values than the all India average of Rs 739/-. The average food consumption expenditure in Himachal Pradesh has increased to Rs 870/- and in Meghalaya it has increased to Rs 770/. We notice that in the gap of just 7 years the difference in the consumption expenditure has increased to Rs 100/- between the two states.

Table 2

Monthly per capita food expenditure and total expenditure

State	Himachal Pradesh			Meghalaya			All India		
Sector / Expenditure	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
2004-05									
Food expenditure	470	655	499	463	591	498	385	510	430
MPCE	904	1540	1004	729	1189	855	696	1123	852
Food expenditure out of MPCE (%)	51.99	42.53	49.7	63.51	49.71	58.25	55.32	45.41	50.47
2011-12									
Food expenditure	832	1186	870	715	975	770	652	956	739
MPCE	1859	3135	1997	1271	2158	1458	1279	2399	1599
Food expenditure out of MPCE (%)	44.76	37.83	43.57	56.25	45.18	52.81	50.98	39.85	46.22

Notes:

(i) MPCE- monthly per capita total expenditure based on Uniform Recall Period.[33]

(ii) Food expenditure and MPCE are in Rupees at current prices.

Source: As in Table 1.

According to Engel's law, the poorer a household is, the larger the budget share it spends on food. The estimates in Table 2 enable us to gauge to some extent the level of development of the two states. In 2004-05, we notice that Meghalaya spent a higher percentage of its MPCE on food compared to Himachal Pradesh and the rest of the country. Meghalaya spends as much as 58.25 percent of its MPCE on food whereas Himachal Pradesh spent 49.70 percentof its MPCE on food. The percentage of expenditure on food at the all India level was 50.47 percent. In 2011-12, we observe that, in absolute terms Himachal Pradesh spends more than Meghalaya on food. However, Meghalaya spends 52.81 percent on food compared to 43.57 percent in Himachal Pradesh and 46.22 percent at the all India level. It is to be noted that the percentage of food expenditure has declined by more or less the same level in the two states as well as India as a whole.

Expenditure on different food groups: How a household allocates its food budget over various food groups has implications on the nutritional status of the household members. In Table 3 we report the percentage distribution of the food expenditure over various food groups in 2004-05 and 2011-12. In view of space constraint, we have reported only the combined results and therefore separate results for rural and urban sectors are available from the authors upon request. We have classified the various food items into 13 groups, namely, (i) cereals and cereal substitutes; (ii) pulses and pulse products; (iii) milk and milk products; (iv) salt and sugar; (v) edible oils; (vi) eggs, fish and meat; (vii) vegetables; (viii) fruits, which include fresh and dry fruits; (ix) spices; (x) beverages, snacks, processed and packed food; (xi) *paan*, *supari*, etc.; (xii) tobacco and (xiii) intoxicants, i.e. beer, liquor, *ganja*, etc

Table 3: Percentage Expenditure on different food groups

Year/State/ Food groups	2004-05			2011-12		
	Himachal Pradesh	Meghalaya	All India	Himachal Pradesh	Meghalaya	All India
Cereals	18.02	23.12	21.12	18.34	22.84	21.72
Pulses & pulse products	5.84	2.15	4.11	7.13	2.82	6.15
Milk & milk products	21.92	6.81	14.77	27.47	6.69	18.43
Salt & sugar	3.73	2.69	2.99	3.67	2.65	3.70

Edible oil	6.66	4.66	5.98	5.63	4.60	7.12
Eggs, fish & meat	5.84	18.28	9.53	4.13	18.97	7.00
Vegetables	6.82	11.11	8.97	7.33	10.77	9.13
Fruits	6.00	3.23	5.23	4.03	2.84	4.56
Spices	2.11	1.08	2.43	3.51	2.22	4.21
Beverages & packed food	8.60	10.22	10.47	13.36	14.52	13.78
Paan	2.60	6.45	2.62	0.00	5.27	0.60
Tobacco	4.55	4.30	3.36	2.69	4.24	2.08
Intoxicants	7.31	5.91	8.41	2.72	1.58	1.53
Total food expenditure	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: As in Table 1.

From the above Table, it is evident that in 2011-12 the people in Himachal Pradesh spent 18.34 percent of their food consumption expenditure on cereals and cereal substitutes, while people in Meghalaya spend 22.84 percent of their food consumption expenditure on the same which is higher than the national average of 21.72 percent. In 2004-05 the people in Himachal Pradesh spent 18.02 percent of their food expenditure on cereals and cereal substitutes whereas people in Meghalaya spent a higher proportion on this category i.e. 23.12 percent which was higher than the national average of 21.12 percent. The share of this category has thus remained more or less at the same level.We see a marked difference in the percentage of expenses on pulses and pulse products between the two states. Himachal Pradesh spends over seven percent whereas Meghalaya spends less than three percent of their consumption expenditure on this category. This is much lower than the national average of 6.15 percent in 2011-12. The percentage has increased in case of Himachal Pradesh and the all India level while no substantial change has taken place in Meghalaya. Meghalaya seems to be consuming a very small amount of pulses and pulse products (which is a good source of vegetable protein), compared to the rest of the country.

When it comes to milk and milk products, in 2004-05 we note that the percentage of expenses on milk and milk products by Himachal Pradeshat 21.92 percent was much higher than the percentage it spent on cereals. However, Meghalaya seems to have given lesser importance to this category at 6.81 percent of its consumption expenditure which is also much lower than the national average of 14.77 percent. In 2011-12 on the other hand, we see that the percentage spent on this category has increased both in Himachal Pradesh as well as at the national level at 27.47 percent and 18.43 percent respectively. However, at 6.69 percent we notice a slight decrease in the percentage of expenditure on this category in Meghalaya. Once again in the case of a nutritious food we see that Meghalaya spends a very small amount which may be a cause of widespread malnourishment in the state.

The percentage of expenses on eggs, fish and meat in 2004-05 was 5.84 percent in Himachal Pradesh whereas it was very high in case of Meghalaya at 18.28 percent. The national average shows the percentage of expenditure in this category at 9.53 percent. Calculations of 2011-12, show that there has been a decline in the consumption of eggs, fish and meat in Himachal Pradesh showing that the percentage of expenses was 4.13 percent while at the national level it was seven percent (a decrease of about two percentage points). However, Meghalaya has shown a very slight increase in the percentage of expenditure at 18.97 percent.We may say that people in Meghalaya eat a lot of meat and so they derive protein in their diet from this category of food. Religious and cultural factors play a major role in the dietary habits of people.

We know that the consumption of fruits and vegetables supplies essential vitamins and minerals to the body. In 2004-05 the percentage of expenditure on consumption of fruits and vegetables taken together is higher in Meghalaya at 14.34 percent compared to Himachal Pradesh at 12.82 percent and the rest of India at 14.2 percent. In 2011-12 the percentage of expenditure on fruits and vegetables taken together has decreased to 13.61 percent in Meghalaya, 11.36 percent in Himachal Pradesh and 13.69 percent at the all India level.

Consumption of snacks and beverages as well as processed, packed or ready-to-serve food has increased considerably in both states and at the all India level with the changing lifestyle of the people. When we consider the percentage of expenditure on *paan*, *supari*, etc. we find that out of the total consumption expenditure in 2004-05, Himachal Pradesh spent 2.60

percent and Meghalaya spent 6.45 percent and the expenditure at the national level was also low at 2.62 percent. In 2011-12 there has been a big change both at the national level and more so in case of Himachal Pradesh which spends nothing on this category. Though there has been a slight reduction in expenditure in this category in case of Meghalaya at 5.27 percent, yet it is still a large percentage of its consumption expenditure compared to that of the national level atonly 0.60 percent.When we take a look at the consumption of tobacco in 2004-05, we see that both the states spent around four percent of their consumption expenditure on this category with Himachal Pradesh at 4.55 percent and Meghalaya at 4.30 percent while at the national level it is 3.36 percent. In 2011-12, there has been a fall in the consumption expenditure on tobacco at the national level to 2.08 percent and Himachal Pradesh at 2.69 percent. However we see a very small fall in the percentage spent in Meghalaya at 4.24 percent.

In the case of expenditure on various types of intoxicants like *ganja*, beer, liquor, etc. we find that the national average was a higher percentage than both the states at 8.41 percent in 2004-05. Himachal Pradesh also spent a higher percentage at 7.31 percent while Meghalaya spent 5.91 percent. In 2011-12 on the other hand, we see that this changed drastically with expenses at the national level having fallen to only 1.53 percent, Himachal Pradesh to 2.72 percent and Meghalaya to 1.58 percent. Expenditure on intoxicants has decreased over the period 2004-05 and 2011-2012 all over the country.

It may be noted that the pattern of consumption plays a role in shaping the health of the people of a state. It is not only the absolute amount of expenditure that matters but how this expenditure is distributed among different food items that will actually determine the health of the people. A widely used summary indicator of the health status is the infant mortality rate. The infant mortality rate currently is 32 per 1000 live births in Himachal Pradesh and 46 in Meghalaya for the period 2012-14 (Government of India, 2016b).The National Family and Health Survey (NFHS) usually estimates three anthropometric measures to look at the nutritional status of children. They are the proportions of stunted (low height for age), wasted (low weight for height) and underweight (low weight for age) children.The NFHS-3 (2005-06)[1] report states that, 55 percent of children in Meghalaya under the age of 5 were stunted, 31 percent of the children were wasted or too thin for their age and 49 percent were underweight. All of these indicate that there is widespread malnutrition among children in Meghalaya. In Himachal Pradesh, 39 percent of children were stunted, 19 percent were wasted and 37 percent

were underweight in 2005-06 (IIPS 2007).

There are several diseases that are closely linked to consumption of certain food items. One such disease is tuberculosis. The number of people who have medically treated tuberculosis according to NFHS-3 was higher in Meghalaya at 446 per 100,000 persons while it was 171 per 100,000 persons in Himachal Pradesh. As is widely known, one of the risk factors of tuberculosis is weakened immune system and the possible reasons for this is malnutrition, use of tobacco, alcohol and drugs. We see that the incidence of malnutrition is higher in Meghalaya than Himachal Pradesh. From the data given above, we also see that there is a higher consumption of *paan*, *supari*, etc and tobacco in Meghalaya.

Conclusion

In this paper we have analysed the consumption pattern of the people in Himachal Pradesh and Meghalaya. Among all the states in India, Himachal Pradesh reported the highest and Meghalaya the lowest calorie intake per person per day. It is also seen that there is a substantial decline in the consumption of protein in Meghalaya compared to the recommended requirement. However, in case of consumption of fat, it is above the normative requirement in both the states. We also note that Meghalaya spends a higher percentage on food than Himachal Pradesh and the rest of India. In spite of that we see that the calorie consumption is very low in Meghalaya. Considering the distribution of expenses on the different food items, Meghalaya spends a lower percentage in the consumption of pulses and pulse products, milk and milk products and a higher percentage on egg, fish and meat, *paan*, *supari*, etc. and tobacco than Himachal Pradesh.

When we consider the health of the people in Meghalaya, more than half of children suffer from chronic malnutrition. Meghalaya also has a higher percentage of children and women suffering from anaemia than Himachal Pradesh. The number of people suffering from tuberculosis is also higher in Meghalaya compared to Himachal Pradesh. As has been observed, Meghalaya spends a good percentage of its per capita consumption expenditure on food but the people are malnourished. The reason as indicated by the findings in this paper is that there is lower allocation of expenditure on basic food items of a balanced diet.

Meghalaya has always been described as a state with a lot of potential to grow and develop in various areas due to its rich natural resources, its

scenic beauty, its unique culture and so on. However we find that there is deterioration of development in Meghalaya and whatever development is taking place, it is concentrated in the urban areas (Government of Meghalaya 2009, p. 27). People in the rural areas are unable to enjoy the basic facilities found in the urban areas like roads, transport and communication, electricity, clean fuel for cooking,health facilities, schools, etc. For example, it is seen that only around 56 percent of the households in the rural sector of Meghalaya use electricity as the main source of lighting compared to 95 percent in the urban sector. In case of fuel used for cooking, around 94 percent of the households use firewood and around three percent of the households use LPG in the rural sector while it is 26 percent and 46 percent respectively in the urban sector (Census, 2011). The fact that there has been little development in the rural areas is also one of the indirect causes of malnutrition. The state of Himachal Pradesh on the other hand is relatively more developed both in the rural and urban areas. This enables people to enjoy better standard of living in every aspect without having to migrate from rural to urban areas as indicated by the fact that the state is the least urbanised among all Indian states.

Notes

[1]From the 66th round (2009-10) onwards, the NSS Consumer Expenditure

Survey used two different schedules of enquiry – Type 1 and Type 2. They were canvassed in two independent samples of matching size. The difference between the two is in the recall period for the consumption of certain items. In Type 1, the reference period for all food items is the last 30 days preceding the date of survey.

[1]The minimum calorie requirement has been used in the determination of the poverty line in India.

[2]The uniform recall period refers to the collection of information regarding the consumption in the last 30 days prior to the survey for all items. The mixed recall period refers to consumption of less frequently purchased items during the last 365 days and the last 30 days for the rest of the items.

[3]Data from the latest NFHS – 4 (2015-16) are not yet available for Himachal Pradesh.

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