Full Length Article

Household Livelihood Security Index (HLSI) of livestock farmers vis-à-vis other occupational groups in rural Tamil Nadu

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ABSTRACT

An attempt was made to compare the Household Livelihood Security Index (HLSI) of Livestock farmers vis-à-vis other occupational groups in rural Tamil Nadu using randomly selected 540 sample households from six poverty prone sample districts. HLSI was constructed for each sample household based on the previous literature and variations among different occupational groups and districts were compared. The HLSI was found to be the highest among crop + livestock farmers (0.4887), followed by fishermen (0.4821), non-farm (0.4701), livestock farmer (0.4583), crop cultivators (0.4347) and agricultural labourers (0.3860) with the overall HLSI of 0.4435. Among different districts, HLSI was found to be the lowest in Pudukottai district (0.3815), followed by Ariyalur (0.4324) and Ramanathapuram (0.4455). Overall, it could be concluded that health and infrastructure indices among different occupations and locality was calculated to be higher when compared to other domains. The study revealed that there is an urgent need to improve the empowerment index irrespective of the locality and occupations.

Key words : Household Livelihood Security Index, Livestock farmers, Occupation

INTRODUCTION

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a mean of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain and enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation (Chambers and Conway, 1992). Every individual has varying livelihood status depending upon their existing assets value, pursuing occupation, managerial capacity and consumption / expenditure behaviour. The superior livelihood status of the households in a society reflects the sign of development. As the livelihood component is a complex element, its method of

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measurement also varies. Among various factors influencing the standard of living, the source of income namely occupation plays a major role. Hence, the present study attempts to assess the Household Livelihood Security Index among various occupational groups in poverty prone districts of rural India, which will help in policy making.

MATERIALS AND METHODS

A Composite Index (CI) was constructed through factor analysis based on secondary data related to livelihood in order to select six sample districts of Tamil Nadu *viz.,* Thiruvannamalai, Villupuram, Dharmapuri, Pudukottai, Ariyalur and Ramanathapuram located in southern part of India. From each selected district, 90 respondents comprising different occupational groups were selected through multi-stage random sampling leading to the sample size of 540 sample households. The data pertaining to the objectives of the study were collected through personal interview using a structured pre-tested interview schedule. The period of data collection was from August 2013 to October 2014.

Lindenberg (2002) analysed livelihood security areas under five broad dimensions: economic security, food security, health security, educational security and empowerment. Hahn *et al.* (2009), CARE (2004) and Akter (2012) developed a set of multiple indicators to assess each of the household security dimensions. From this recommended set, a suite of indicators was selected depending upon their importance. Some of the important variables like average per capita calorie intake, protein intake, fat intake, landholdings, livestock holdings, *etc.* which were considered to determine the livelihood of the households were included in the present study. Infrastructure had a major contribution to human development and livelihood security (Gopalakrishnan and Leelavathi, 2011; Kusharjanto and Kim, 2011). Hence, indicators of infrastructure facility were also included in the present study for constructing the Household Livelihood Security Index (HLSI). The indicators considered for the present study is listed in Table 1.

Following Akter (2012), HLSI was constructed based on balanced weighted average approach, where each indicator contributes equally to the overall index. Since each indicator was measured on a different scale, indicators were standardized similar to standardization technique adopted for measuring Human Development Indices (also adopted by Hahn *et al.,* 2009 and Akter, 2012). If the indicator $zind_j$ is positively associated with the livelihood, a standardized indicator *'j'* was calculated as

$$zind_j (+) = \frac{Indicator_j - Min.\ j}{Max.\ j - Min.\ j}$$

where, maximum and minimum values of indicators were from the same occupational group / district within which the household belonged.

Among various variables, the liabilities, dependency ratio, health domain indicators / sickness and all infrastructure domain indicators except access to communication equipment had negative association with livelihood improvement. Hence, as per the generalization of relative approach underlying the Human Development Index

reported by UNDP (1990) and Anand and Sen (1994), such negatively associated indicators variable were indexed as follows:

$$zind_j\,(-) = \frac{Max.\,j - Indicator_j}{Max.\,j - Min.\,j}$$

Once each indicator ($zind_j$) representing a particular livelihood security domain was standardized, relevant household livelihood security index for the particular domain was constructed by averaging the standardized indicators;

$$HLS_i = \frac{\sum_{j=1}^{J} zindj}{J}$$

where, J was the number of indicators used to construct the index. Once HLS index was constructed, then composite overall Livelihood Security (LS) index for the household was constructed by using the formula

$$HLSI_i = \frac{\sum_{i=1}^{n} wi\ HLSi}{\sum_{i=1}^{n} wi}$$

where, w was the weight determined by the number of indicators used to construct each HLS index. Weights vary between households because of household level variation in the number of indicators.

RESULTS AND DISCUSSION

The distribution of sample respondents based on location of living and primary occupation is displayed in Table 2. It is evident from the table that out of 540 sample respondents, 90 respondents each were from Thiruvannamalai, Villupuram, Dharmapuri, Pudukottai, Ariyalur and Ramanathapuram districts representing four agro-climatic zones *viz*., North-Eastern, North-Western, Cauvery Delta and Southern zones. Nearly 40 per cent of the respondents practised livestock farming and 13 per cent practised cropping as their primary occupation. Crop and livestock farming together were practised by 28.89 per cent of the sample respondents. Agricultural labourers and non-farm workers represented 6.30 per cent and 6.48 per cent of the total sample respondents, respectively. About 5 per cent of the respondents belonged to fishermen category. Majority of livestock farmers belonged to cattle farming (37.56 per cent) and goat farming (36.62 per cent) category. About one-sixth and one-tenth of the sample of livestock farmers belonged to sheep farming and buffalo farming, respectively. The proportion of crop cultivators, livestock farmers, crop cum livestock farmers, agricultural labourers and non-farm workers were 14.44 per cent, 28.89 per cent, 38.89 per cent, 6.67 per cent and 11.11 per cent, respectively in Thiruvannamalai district (41.11 per cent). The livestock farmers constituted major proportion (38.89 per cent) of sample respondents in Villupuram district, followed by crop + livestock farmers (36.67 per cent) and crop cultivators (12.22 per cent). Agricultural labourers and non-farm workers together comprised about one-tenth of sample respondents each in Villupuram and Thiruvannamalai districts. Regarding the primary occupation, the pattern of distribution of sample respondents of Dharmapuri district was similar to that of Villupuram district. About one-half

of the respondents from Pudukottai and Ramanathapuram districts belonged to livestock farmers' category.

The sample respondents were post stratified into four categories based on the land holdings as shown in Table 3. From the table, it is evident that majority of sample respondents in Ramanathapuram district (72.22 per cent) and Pudukottai district (64.45 per cent) belonged to landless category. About one-half of the respondents from Villupuram and Dharmapuri districts and one-third from Thiruvannamalai and Ariyalur districts fell under the landless category. Out of the total respondents, marginal farmers belonged to about 45 per cent in Thiruvannamalai and Ariyalur districts, about 35 per cent in Villupuram and Dharmapuri districts and about 24 per cent in Pudukottai district and about 18 per cent in Ramanathapuram district. The occupation-wise distribution of sample respondents based on landholdings is presented in Table 3. The table clearly indicated that all the fishermen and agricultural labourers included in the present study were landless. Out of crop cultivators, marginal farmers and small farmers constituted 52.78 per cent and 27.78 per cent, respectively. Rest of the crop cultivators (19.44 per cent) had more than two hectares of land. Majority of livestock farmers (82.63 per cent) and non-farm workers (85.71 per cent) belonged to landless category. The findings were in line with Ali (2007). As they had no land, they might have oriented towards livestock farming and non-farm occupation as their prime source of income. A very meagre proportion of livestock farmers (0.94 per cent) and none of the non-farm workers had more than two hectares of landholding. It is evident from the table that about 15 per cent of livestock farmers belonged to marginal farmer category having less than one hectare of land and as they reared livestock to earn primary source of income and they might have cultivated crop as a subsidiary occupation. As a result, crop residues could be utilized for their primary (livestock) occupation and farmyard manure could be utilized for their secondary occupation (cropping) thereby a kind of integrated farming was practised in the study area. To summarize, one-half of total respondents were landless followed by marginal farmers (33.70 per cent), small farmers (10.56 per cent). Only a meagre proportion (5.74 per cent) had more than two hectares of land.

Perusal of the Table 4 revealed that women-headed households were noticed among 44.44 per cent of sample respondents in Villupuram district, followed by Pudukottai (32.22 per cent), Ariyalur (30.00 per cent), Thiruvannamalai (23.33 per cent), Ramanathapuram (15.56 per cent) and Dharmapuri (6.67 per cent) districts. Among different occupations, women headed households were more prevalent among agricultural labourer category (67.65 per cent), followed by livestock farming category (31.92 per cent), crop + livestock farming (21.15 per cent) and non-farm workers (17.14 per cent). Out of total 137 women sample respondents, 50 per cent were of livestock farmers and 24 per cent were of crop + livestock farmers, which clearly that indicated women empowerment has occured through livestock farming activity. As a whole, the gender distribution of head of the households was in the ratio of about 3 men : 1 woman.

The table 4 vividly indicated that out of 540 sample respondents, 41.11 per cent were found to be illiterates, 36.11 per cent were found to have primary level of education and about 21.11 per cent of them had secondary level of education. Only a meagre proportion (1.67 per cent) of the sample respondents was graduates. The proportion of illiterate headed households were maximum in Dharmapuri district (48.89 per cent), followed by Pudukottai (47.78 per cent), Ramanathapuram (43.33 per cent) and Villupuram (42.22 per cent) districts. Among the nine graduates in the sample respondents, three were from Thiruvannamalai district, two from Dharmapuri district and one each from the rest of the sample districts. As shown in Table 5, it is evident that out of 72 crop cultivators, 42 per cent were illiterates, about 35 per cent were educated up to primary level and rest were educated up to secondary level. None of the crop cultivators, agricultural labourers and non-farm workers was graduates. Among the livestock farmers about one-half of the respondents were illiterates and rest were educated from primary to collegiate level. Majority of agricultural labourers were illiterates (52.94 per cent) and primary level educated (41.18 per cent). About one-half of the sample fishermen had primary level of education and about one-fourth had above secondary level of education. It is peculiar to note that out of nine graduate respondents, seven had crop + livestock farming occupation and one each practised livestock farming and fishing activity as their main occupation.

Perusal of Table 6 showed that majority of the total sample respondents belonged to Hindu religion (88.15 per cent), followed by Christians (8.52 per cent) and Muslims (3.33 per cent). The distribution pattern of three religions was more or less similar in all the selected districts except in Ramanathapuram, where the proportion of Christians (23.33 per cent) and Muslims (8.89 per cent) was higher. The distribution of various occupational groups based on religion is portrayed in Table 7. The results implied that the about 95 per cent each of crop cultivator and crop + livestock farmer belonged to the Hindu religion and the rest were equally shared by Muslims and Christians. Majority of livestock farmers belonged to the Hindu religion (89.67 per cent), followed by Christians (6.57 per cent) and Muslims (3.76 per cent). The same pattern was noticed among agricultural labourers. It is peculiar to note that about two-thirds of the fishermen belonged to Christian religion and rest of them belonged to Hindu religion. The community-wise classification of sample respondents as shown in Table 6 implied that Scheduled Tribe (ST) community constituted about one-third of the sample respondents in Thiruvannamalai district and about one-fourth of them each in Villupuram and Dharmapuri districts respectively. About 58 per cent, 51 per cent and 37 per cent of the sample respondents belonged to Scheduled Castes (SC) in Pudukottai, Ramanathapuram and Ariyalur districts respectively. The SC proportion was comparatively less in Thiruvannamalai (11.11 per cent) and Dharmapuri (14.44 per cent) districts. The representation of Other Communities (OC) was about one to two per cent of the sample respondents in various selected districts of Tamil Nadu. The occupation-wise

distribution of community is presented in Table 7 and it could be inferred that about one-half of the crop cultivators belonged to the Backward Caste (BC) and about one-fifth belonged to the Most Backward Caste (MBC). Majority of the selected agricultural labourers (61.76 per cent) and livestock farmers (54.93 per cent) belonged to SC community. About one-fourth each of the fishermen and non-farm workers belonged to SC community. Overall, it could be concluded that the pattern of representation of different communities were in the order of BC (37.04 per cent), SC (32.78 per cent), MBC (15.74 per cent), ST (12.96 per cent) and OC (1.48 per cent).

The mean value and standard deviation of household security indicators, which were grouped into different domains representing security areas such as economic, food / nutrition, health, education, empowerment and infrastructure were calculated and is shown in Table 8. Finally, the Household Livelihood Security Index (HLSI) was computed for the sample respondents comprising different occupational groups from the selected districts of Tamil Nadu and are presented in Table 9. The HLSI was found to be the highest among crop + livestock farmers (0.4887), followed by fishermen (0.4821), non-farm (0.4701), livestock farmer (0.4583), crop cultivators (0.4347) and agricultural labourer (0.3860) with the overall HLSI of 0.4435. Among different districts, HLSI was found to be the lowest in Pudukottai district (0.3815), followed by Ariyalur (0.4324) and Ramanathapuram (0.4455). The districts from North-Eastern and North-Western zone had higher HLSI (0.4706 to 0.4908), when compared to Cauvery Delta and Southern zones (0.3815 to 0.4455) as shown in Table 10.

Among various domains of HLSI, health security index was found to have higher value (0.8163), followed by infrastructure index (0.6919). The index values of economic, food and education were found to be at the moderate level (0.3025 to 0.3737). Among different domains, empowerment index was found to be the least (0.1477). The results clearly indicated the need for improvement of empowerment. The selected livestock farmers had the maximum index value for health security (0.7968), followed by infrastructure security (0.6733), economic security (0.4016), food security (0.3200) and empowerment (0.1682). The food security indices were higher among the fishermen, livestock farmers and crop cultivators, when compared to non-farm workers and agricultural labourer. This might be due to the reason of food availability and accessibility in their own households / farms.

Overall, it could be concluded that health and infrastructure indices among different occupations and locality was calculated to be higher when compared to other domains. There is an urgent need to improve the empowerment index irrespective of the locality and occupations. Among agricultural labourers, economic, food, health, education and empowerment should be addressed immediately. Attention should also be given to improve the economic security, food security and educational security among different occupational groups and locality. Special focus is warranted for improvement of

different security domains in Ariyalur and Pudukottai districts.

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Table 1 Household Livelihood Security Indicators

S.No.	Indicators
A.	**Economic domain**
1	Per capita income in rupees
2	Asset value per person in rupees
3	Current savings per person in rupees
4	Employment level of family members (in mandays / year)
5	Dependency rate (Number of dependents / Number of earning members in a household)
6	Current liabilities per person in rupees
B	**Food / nutritional domain**
1	Household food grain stock for a month in rupees
2	Number of main meals taken by a women in a household
3	Per capita calorie intake per day (in kcal)
4	Per capita protein intake per day (in grams)
5	Per capita fat intake per day (in grams)
C	**Health domain**
1	Incidence of diarrhoea (days/month)
2	Incidence of other sickness (days/month)
3	Number of days, an active person unable to work due to sickness
D.	**Education domain**
1	Adult male literacy (number of years of education)
2	Adult female literacy (number of years of education)
3	Number of children enrolled (6 – 15 years of age) (Number of children enrolled / number of children in a family)
E.	**Empowerment domain**
1	Participation in a development organization / social activity
2	Access to services / organization that offer services (number/month)
3	Household participation in planning and decision making (number of persons involved in a household)
F.	**Infrastructure domain**
1	Distance to nearest town in kms.
2	Distance to nearest school in kms.
3	Distance to hospital in kms.
4	Distance to access to safe drinking water in kms.
5	Distance to sanitation facility in kms.

Table 2 Distribution of sample respondents based on location and primary occupation

(numbers)

S.No.	Primary occupation	Agro-climatic zones / Districts						Overall
		North-Eastern zone		North-Western zone	Cauvery Delta zone		Southern zone	
		Thiruvannamalai	Villupuram	Dharmapuri	Pudukottai	Ariyalur	Ramanathapuram	
1	Cropping	13 (14.44)[a]	11 (12.22)[a]	15 (16.67)[a]	10 (11.11)[a]	21 (23.33)[a]	2 (2.22)[a]	**72 (13.33)[a]**
2	Livestock farming	26 (28.89)[a] (100.00)[b]	37 (41.11)[a] (100.00)[b]	37 (41.11)[a] (100.00)[b]	48 (53.33)[a] (100.00)[b]	23 (25.56)[a] (100.00)[b]	42 (46.68)[a] (100.00)[b]	**213 (39.44)[a] (100.00)[b]**
	a. Cattle	22 (84.62)[b]	30 (81.08)[b]	28 (75.68)[b]	-	-	-	**80 (37.56)[b]**
	b. Buffalo	4 (15.38)[b]	7 (18.92)[b]	9 (24.32)[b]	-	-	-	**20 (9.39)[b]**
	c. Sheep	-	-	-	9 (18.75)[b]	6 (26.09)[b]	20 (47.62)[b]	**35 (16.43)[b]**
	d. Goat	-	-	-	39 (81.25)[b]	17 (73.91)[b]	22 (52.38)[b]	**78 (36.62)[b]**
3	Crop + Livestock farming	35 (38.89)[a]	33 (36.67)[a]	28 (31.11)[a]	17 (18.89)[a]	35 (38.89)[a]	8 (8.89)[a]	**156 (28.89)[a]**
4	Fishing	-	-	-	-	-	30 (33.33)[a]	**30 (5.56)[a]**
5	Agricultural Labourer	6 (6.67)[a]	4 (4.44)[a]	4 (4.44)[a]	10 (11.11)[a]	6 (6.67)[a]	4 (4.44)[a]	**34 (6.30)[a]**
6	Non-farm occupation	10 (11.11)[a]	5 (5.56)[a]	6 (6.67)[a]	5 (5.56)[a]	5 (5.55)[a]	4 (4.44)[a]	**35 (6.48)[a]**
Total		**90 (100.00)[a]**	**90 (100.00)[a]**	**90 (100.00)[a]**	**90 (100.00)[a]**	**90 (100.00)[a]**	**90 (100.00)[a]**	**540 (100.00)[a]**

a – Figures in the parentheses indicate per cent to total and b – Figures in the parentheses indicate per cent to total livestock farmers

Table 3 Location-wise distribution of sample respondents based on landholdings

(numbers)

S.No.	Landholdings	Agro-climatic zones / Districts						Overall
		North-Eastern zone		North-Western zone	Cauvery Delta zone		Southern zone	
		Thiruvannamalai	Villupuram	Dharmapuri	Pudukottai	Ariyalur	Ramanathapuram	
1	Landless	29 (32.22)	42 (46.67)	44 (48.89)	58 (64.45)	32 (35.56)	65 (72.22)	**270 (50.00)**
2	Marginal	40 (44.45)	33 (36.67)	31 (34.44)	22 (24.44)	40 (44.44)	16 (17.78)	**182 (33.70)**
3	Small	12 (13.33)	9 (10.00)	6 (6.67)	7 (7.78)	16 (17.78)	7 (7.78)	**57 (10.56)**
4	Semi-medium, Medium and Large	9 (10.00)	6 (6.66)	9 (10.00)	3 (3.33)	2 (2.22)	2 (2.22)	**31 (5.74)**
Total		**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**540 (100.00)**

S.No.	Landholdings	Primary occupation						Overall
		Cropping	Livestock farming	Crop + Livestock farming	Fishing	Agricultural labour	Non-farm occupation	
1	Landless	-	176 (82.63)	-	30 (100.00)	34 (100.00)	30 (85.71)	**270 (50.00)**
2	Marginal	38 (52.78)	32 (15.02)	108 (69.23)	-	-	4 (11.43)	**182 (33.70)**
3	Small	20 (27.78)	3 (1.41)	33 (21.15)	-	-	1 (2.86)	**57 (10.56)**
4	Semi-medium, Medium and Large	14 (19.44)	2 (0.94)	15 (9.62)	-	-	-	**31 (5.74)**
Total		**72 (100.00)**	**213 (100.00)**	**156 (100.00)**	**30 (100.00)**	**34 (100.00)**	**35 (100.00)**	**540 (100.00)**

Figures in the parentheses indicate per cent to total

Table 4 Location-wise distribution of respondents based on gender and educational level of head of households

(numbers)

S.No.	Particulars	Agro-climatic zones / Districts						Overall
		North-Eastern zone		North-Western zone	Cauvery Delta zone		Southern zone	
		Thiruvannamalai	Villupuram	Dharmapuri	Pudukottai	Ariyalur	Ramanathapuram	
A	**Gender**							
1	Male	69 (76.67)	50 (55.56)	84 (93.33)	61 (67.78)	63 (70.00)	76 (84.44)	**403 (74.63)**
2	Female	21 (23.33)	40 (44.44)	6 (6.67)	29 (32.22)	27 (30.00)	14 (15.56)	**137 (25.37)**
B	**Educational level**							
1	Illiterates	23 (25.56)	38 (42.22)	44 (48.89)	43 (47.78)	35 (38.89)	39 (43.33)	**222 (41.11)**
2	Primary	43 (47.78)	17 (18.89)	27 (30.00)	41 (45.56)	31 (34.44)	36 (40.00)	**195 (36.11)**
3	Secondary	21 (23.33)	34 (37.78)	17 (18.89)	5 (5.55)	23 (25.56)	14 (15.56)	**114 (21.11)**
4	Collegiate	3 (3.33)	1 (1.11)	2 (2.22)	1 (1.11)	1 (1.11)	1 (1.11)	**9 (1.67)**
Total		**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**540 (100.00)**

Figures in the parentheses indicate per cent to total

Table 5 Occupation-wise distribution of respondents based on gender and educational level of head of households

(numbers)

S.No.	Particulars	Primary occupation						Overall
		Cropping	Livestock farming	Crop + Livestock farming	Fishing	Agricultural labour	Non-farm occupation	
A	**Gender**							
1	Male	68 (94.44)	145 (68.08)	123 (78.85)	27 (90.00)	11 (32.35)	29 (82.86)	**403 (74.63)**
2	Female	4 (5.56)	68 (31.92)	33 (21.15)	3 (10.00)	23 (67.65)	6 (17.14)	**137 (25.37)**
B	**Educational level**							
1	Illiterates	30 (41.67)	113 (53.05)	47 (30.13)	8 (26.67)	18 (52.94)	6 (17.14)	**222 (41.11)**
2	Primary	25 (34.72)	72 (33.80)	53 (33.97)	14 (46.67)	14 (41.18)	17 (48.57)	**195 (36.11)**
3	Secondary	17 (23.61)	27 (12.68)	49 (31.41)	7 (23.33)	2 (5.88)	12 (34.29)	**114 (21.11)**
4	Collegiate	-	1 (0.47)	7 (4.49)	1 (3.33)	-	-	**9 (1.67)**
Total		**72 (100.00)**	**213 (100.00)**	**156 (100.00)**	**30 (100.00)**	**34 (100.00)**	**35 (100.00)**	**540 (100.00)**

Figures in the parentheses indicate per cent to total

Table 6 Location-wise distribution of respondents based on religion and community of sample respondents

(numbers)

S.No.	Particulars	Agro-climatic zones / Districts						Overall
		North-Eastern		North-Western	Cauvery Delta		Southern	
		Thiruvannamalai	Villupuram	Dharmapuri	Pudukottai	Ariyalur	Ramanathapuram	
A	**Religion**							
1	Hindus	83 (92.22)	83 (92.22)	82 (91.11)	85 (94.45)	82 (91.11)	61 (67.78)	**476 (88.15)**
2	Muslims	2 (2.22)	2 (2.22)	2 (2.22)	2 (2.22)	2 (2.22)	8 (8.89)	**18 (3.33)**
3	Christians	5 (5.56)	5 (5.56)	6 (6.67)	3 (3.33)	6 (6.67)	21 (23.33)	**46 (8.52)**
B	**Community**							
1	Other Community	2 (2.22)	1 (1.11)	1 (1.11)	1 (1.11)	2 (2.22)	1 (1.11)	**8 (1.48)**
2	Backward Community	28 (31.11)	11 (12.22)	33 (36.67)	34 (37.78)	54 (60.00)	40 (44.45)	**200 (37.04)**
3	Most Backward Community	20 (22.22)	35 (38.89)	23 (25.56)	3 (3.33)	1 (1.11)	3 (3.33)	**85 (15.74)**
4	Scheduled Castes	10 (11.11)	23 (25.56)	13 (14.44)	52 (57.78)	33 (36.67)	46 (51.11)	**177 (32.78)**
5	Scheduled Tribes	30 (33.34)	20 (22.22)	20 (22.22)	-	-	-	**70 (12.96)**
Total		**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**90 (100.00)**	**540 (100.00)**

Figures in the parentheses indicate per cent to total

Table 7 Occupation-wise distribution of respondents based on religion and community of sample respondents

(numbers)

S.No.	Particulars	Primary occupation						Overall
		Cropping	Livestock farming	Crop + Livestock farming	Fishing	Agricultural labour	Non-farm occupation	
A	**Religion**							
1	Hindus	68 (94.44)	191 (89.67)	148 (94.88)	10 (33.33)	28 (82.35)	31 (88.57)	**476 (88.15)**
2	Muslims	2 (2.78)	8 (3.76)	4 (2.56)	-	1 (2.94)	3 (8.57)	**18 (3.33)**
3	Christians	2 (2.78)	14 (6.57)	4 (2.56)	20 (66.67)	5 (14.71)	1 (2.86)	**46 (8.52)**
B	**Community**							
1	Other Community	5 (6.95)	1 (0.47)	1 (0.64)	-	1 (2.94)	-	**8 (1.48)**
2	Backward Community	35 (48.61)	50 (23.47)	77 (49.36)	22 (73.33)	4 (11.77)	12 (34.29)	**200 (37.04)**
3	Most Backward Community	14 (19.44)	38 (17.84)	26 (16.67)	-	2 (5.88)	5 (14.29)	**85 (15.74)**
4	Scheduled Castes	7 (9.72)	117 (54.93)	15 (9.61)	8 (26.67)	21 (61.76)	9 (25.71)	**177 (32.78)**
5	Scheduled Tribes	11 (15.28)	7 (3.29)	37 (23.72)	-	6 (17.65)	9 (25.71)	**70 (12.96)**
Total		**72 (100.00)**	**213 (100.00)**	**156 (100.00)**	**30 (100.00)**	**34 (100.00)**	**35 (100.00)**	**540 (100.00)**

Figures in the parentheses indicate per cent to total

Table 8 Household Livelihood Security Indicators

S.No.	Indicators	Mean	Standard Deviation
A.	**Economic domain**		
1	Per capita income in rupees	1091.73	891.14
2	Asset value per person in rupees	39896.65	45089.24
3	Current savings per person in rupees	13.05	114.21
4	Employment level of family members (in mandays / year)	233.51	122.54
5	Dependency rate (Number of dependents / Number of earning members in a household)	1.89	1.45
6	Current liabilities per person in rupees	1186.99	9828.48
B	**Food / nutritional domain**		
1	Household food grain stock for a month in rupees	702.13	525.79
2	Number of main meals taken by a women in a household	2.69	0.46
3	Per capita calorie intake per day (in kcal)	1846.20	603.09
4	Per capita protein intake per day (in grams)	43.34	15.46
5	Per capita fat intake per day (in grams)	16.54	11.77
C	**Health domain**		
1	Incidence of diarrhoea (days/month)	0.26	0.77
2	Incidence of other sickness (days/month)	1.30	1.17
3	Number of days, an active person unable to work due to sickness	1.35	1.10
D.	**Education domain**		
1	Adult male literacy (number of years of education)	4.59	4.72
2	Adult female literacy (number of years of education)	3.70	3.76
3	Number of children enrolled (6 – 15 years of age) (Number of children enrolled / number of children in a family)	0.82	0.43
E.	**Empowerment domain**		
1	Participation in a development organization / social activity	0.20	0.49
2	Access to services / organization that offer services (no./ month)	0.59	0.84
3	Household participation in planning and decision making (number of persons involved in a household)	1.78	0.77
F.	**Infrastructure domain**		
1	Distance to nearest town in kms.	10.47	6.40
2	Distance to nearest school in kms.	5.25	3.41
3	Distance to hospital in kms.	6.40	3.86
4	Distance to access to safe drinking water in kms.	0.85	0.65
5	Distance to sanitation facility in kms.	2.04	0.97

Table 9 Household Livelihood Security Indices among various occupational groups in Tamil Nadu, India

S.No.	Occupation	Economic security index	Food security index	Health security index	Education index	Empowerment index	Infrastructure index	Household Livelihood Security Index (HLSI)
1	Cropping	0.4454 (0.0094)	0.3228 (0.0181)	0.5713 (0.0231)	0.4317 (0.0341)	0.1354 (0.0231)	0.6334 (0.0171)	**0.4347 (0.0086)**
2	Livestock farming	0.4016 (0.0057)	0.3200 (0.0115)	0.7968 (0.0106)	0.3953 (0.0153)	0.1682 (0.0083)	0.6733 (0.0083)	**0.4583 (0.0049)**
3	Crop + Livestock farming	0.4672 (0.0081)	0.3647 (0.0102)	0.8370 (0.0125)	0.5034 (0.0181)	0.1191 (0.0076)	0.6425 (0.0112)	**0.4887 (0.0049)**
4	Fishing	0.3759 (0.0238)	0.5032 (0.0292)	0.5778 (0.0389)	0.3983 (0.0446)	0.3389 (0.0314)	0.6674 (0.0279)	**0.4821 (0.0150)**
5	Agricultural Labourer	0.4086 (0.1088)	0.2590 (0.0868)	0.6765 (0.1286)	0.2410 (0.0715)	0.1225 (0.0286)	0.5567 (0.0852)	**0.3860 (0.0879)**
6	Non-farm occupation	0.4203 (0.0898)	0.3173 (0.0619)	0.7745 (0.1429)	0.4126 (0.1410)	0.3480 (0.0857)	0.6078 (0.1262)	**0.4701 (0.1035)**
Overall		**0.3737 (0.0025)**	**0.3173 (0.0065)**	**0.8163 (0.0061)**	**0.3025 (0.0082)**	**0.1477 (0.0053)**	**0.6919 (0.0049)**	**0.4435 (0.0027)**

Figures in parentheses indicate standard error

Table 10 Household Livelihood Security Indices among various regions of Tamil Nadu, India

S.No.	Districts	Economic security index	Food security index	Health security index	Education index	Empowerment index	Infrastructure index	Household Livelihood Security Index (HLSI)
1	Thiruvannamalai	0.4901 (0.0118)	0.3920 (0.0180)	0.8847 (0.0144)	0.3672 (0.0215)	0.1889 (0.0175)	0.5835 (0.0169)	**0.4856 (0.0080)**
2	Villupuram	0.4717 (0.0108)	0.3645 (0.0130)	0.7565 (0.0190)	0.3952 (0.0242)	0.1602 (0.0136)	0.6354 (0.0176)	**0.4706 (0.0075)**
3	Dharmapuri	0.4713 (0.0110)	0.4533 (0.0158)	0.7924 (0.0231)	0.3146 (0.0239)	0.2278 (0.0172)	0.6341 (0.0124)	**0.4908 (0.0081)**
4	Pudukottai	0.3827 (0.0091)	0.2042 (0.0154)	0.6481 (0.0179)	0.2698 (0.0161)	0.1120 (0.0123)	0.6259 (0.0153)	**0.3815 (0.0071)**
5	Ariyalur	0.3664 (0.0084)	0.3328 (0.0180)	0.7250 (0.0197)	0.3117 (0.0222)	0.2167 (0.0187)	0.6376 (0.0157)	**0.4324 (0.0078)**
6	Ramanathapuram	0.4041 (0.0090)	0.3661 (0.0160)	0.7139 (0.0202)	0.2736 (0.0195)	0.1917 (0.0138)	0.6691 (0.0147)	**0.4455 (0.0067)**
Overall		**0.3737 (0.0025)**	**0.3173 (0.0065)**	**0.8163 (0.0061)**	**0.3025 (0.0082)**	**0.1477 (0.0053)**	**0.6919 (0.0049)**	**0.4435 (0.0027)**

Figures in parentheses indicate standard error