



# Determinant of Household Food Consumption Diversity in Lampung Province

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## ABSTRACT

Changing more diverse food patterns and reducing rice consumption were efforts to improve food quality to get superior human resources. The goal of this study was to detect household food consumption diversity in Lampung Province using the Berry Index (BI) and to investigate its determinants. This study utilized secondary data from the 2019 National Social Economic Survey (NSES). The sample size for this study was 9,046 households. The BI technique was utilized to examine household diversity, while linear multiple regression was employed to identify the factors influencing food consumption diversification. The findings revealed that most families were classified as moderately diverse, with an average BI of 0.826. Household food diversity was determined by household income, number of household members, age of head of family, education of head of household and housewife, type of area, gender of household head, and level of welfare.

**Keywords:** Berry Index, diversification, food share, Lampung Province

## INTRODUCTION

Improving a country's food security is a major goal in economic development since it results in higher-quality human resources. National and individual food security will create a security system that allows the entire population to have enough food to live healthy and active lifestyles. Food can be difficult to obtain for a variety of reasons, including availability, distribution, quality, and pricing (Widada *et al.* 2017). One pillar of food security is food use (Widada *et al.* 2017). Dietary utilization can be used to assess a population's or an individual's ability to consume, absorb, and metabolize nutrients, indicating dietary quality (Lestari *et al.* 2018; Syakirotin *et al.* 2022). According to Badan Ketahanan Pangan (2020), Lampung Province has a low food usage index in relation to food supply and affordability. Lampung Province has the following food security index values: food availability (99.89), food affordability (67.76), and food utilization (52.67). One of the reasons for the region's bad health is a lack of food consumption. Poor health quality can make the population more susceptible to disease and increase cases of malnutrition, such as stunting in the region (Dito & Prayitno 2019). Lampung Province has the Special Index for Stunting Management, or "Indeks Khusus Penanganan Stunting (IKPS)" that is the same as the national IKPS, although the food component, as one of the indicators that make up the IKPS, actually

declined from 2021 to 2022 (BPS 2023). This demonstrates that the issue of food adequacy still requires attention.

Diversification of food intake is an important measure of food quality and contributes significantly to nutrition improvement initiatives. A diversified diet not only covers people's nutritional needs, but it also reduces reliance on a particular type of food (Khomsan *et al.* 2013). Reducing reliance on specific foods can help communities achieve food self-sufficiency, which is a crucial goal of development, particularly in agriculture. Therefore, conducting research on food consumption diversification, including how to measure it, is critical.

The Berry Index (BI) is one of numerous ways for calculating food consumption diversification (Miranti 2017). Several researchers have used this index to investigate the level of diversification, including Thiele and Weiss (2003), Alexandri and Kevorchian (2015) Alexandri *et al.* (2015), Miranti *et al.* (2016), Codjoe *et al.* (2016), Kunto and Bras (2019), Saputra *et al.* (2019), dan Hutagaol *et al.* (2022), among others. The BI is helpful because of its ease of use and capacity to assess data over a wide range. Furthermore, BI can be used to determine the variability of food consumption in relation to household food spending (food share). In contrast, the Central Statistics Agency assessed food consumption diversification using the Desirable Dietary Pattern (DDP) score rather than the BI. Notably, no research has focused on food consumption diversification in Lampung Province using BI; this study intends to fill that information gap.

Diversification in food consumption patterns is an important measure of people's eating habits. A range

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of factors influence these habits, including economic, social, and cultural elements, as well as physical factors like food availability. Numerous research has looked into the elements that influence food intake habits. Thiele and Weiss (2003) found that family size, age, gender composition, employment status, and education level all have an impact on the level of food consumption diversity. Additionally, Thiele and Weiss (2003) discovered that income, education level, family size, and place of residence all have a substantial impact on food consumption diversity. Because evaluating food consumption diversification using the differs from other approaches, it is critical to determine the many elements that influence it, especially in Lampung Province. As a result, the purpose of this study was to examine the amount of household food consumption diversification in Lampung Province using BI and identify its determinants.

## METHODS

The research used a descriptive approach with secondary data, notably cross-sectional data. The dataset was obtained from Lampung Province's Badan Pusat Statistik (BPS) and was based on the 2019 National Socio-Economic Survey (Susenas). This study assessed raw data from 9,653 households. BPS used a multistage probability sampling technique for the 2019 Susenas. In the first stage, 40% of the 7,500 census blocks were chosen using a probabilistic method proportional to their size. The second stage entailed the systematic selection of additional census blocks within each rural or urban stratum in the regencies and cities. Finally, in the third round, households were drawn from each census block.

The stages of data analysis began with an outlier test, which is a test of data observations with characteristics that are considerably different from those of other data. This test was intended to discover data that is deemed outlier data. To find outliers, the data was first converted into standard scores (z-scores). Outliers were those with z-scores of -3 or higher (Ghozali 2016). Based on the outlier test results, this study had 607 outlier data points, resulting in a total of 9,046 households.

The following stage required quantitative descriptive and verified data analysis. A quantitative descriptive analysis was utilized to synthesize the data in tabular form to demonstrate the extent of food consumption diversification in families based on BI. According to Alexandri *et al.* (2015), the variation (diversity) of food consumption can be quantified with BI. Furthermore, Thiele and Weiss (2003) suggested that, while there are numerous indices for quantifying variation in food consumption diversification, BI is the most relevant choice. The index value ranges from 0 to 1. The

assumption in this computation is that if the BI value is 0, the household only buys one food product, and if the BI value is 1, the household purchases all sorts of food products (Qineti *et al.* 2017; Thiele & Weiss 2003). The Berry Index was calculated as follows (equation 1):

$$BI = 1 - \sum_{j=1}^n S^2_{ij} \dots \dots (1)$$

where:

$B_i$  = Berry Index for household  $i$

$S_j$  = Distribution of expenditure budget for product  $j$  on household  $i$ 's food expenditure

$j$  = Food commodities consisting of: (1) grains; (2) tubers; (3) meat; (4) eggs and milk; (5) fish/shellfish/squid/shrimp; (6) oils and fats; (7) nuts; (8) fruit and oily seeds; (9) sugar; (10) vegetables; (11) fruits; (12) others

$n$  = Upper limit

The factors of food consumption diversification were identified using multiple linear regression analysis with the Ordinary Least Squares (OLS) model. Equation 2 represents the analysis model for this investigation.

$$B_i = \alpha_0 + \ln \beta_1 X_1 + \ln \beta_2 X_2 + \ln \beta_3 X_3 + \ln \beta_4 X_4 + \ln \beta_5 X_5 + \alpha_1 D1 + \alpha_2 D2 + \alpha_3 D3 + \epsilon_i \dots \dots (2)$$

where:

$B_i$  = Berry Index (consumption diversification) for household  $i$

$\alpha_1$  = Intercept

$\beta_1$ – $\beta_5$  = Estimated parameters

$X_1$  = Household income (IDR per month)

$X_2$  = Number of household members (person)

$X_3$  = Head of household age (yr)

$X_4$  = Head of household education (level)

$X_5$  = Housewife's education (level)

$D1$  = Area type dummy (1 = urban, 0 = rural)

$D2$  = Head of household gender dummy (1 = female, 0 = male)

$D3$  = Welfare level dummy (1 = prosperous, 0 = not yet prosperous)

The initial step in regression analysis was to examine classical assumptions like multicollinearity and heteroscedasticity. The Variance Inflation Factor (VIF) detects multicollinearity, while the White test examines for heteroscedasticity. Following that, statistical criterion tests were carried out, such as the coefficient of determination ( $R^2$ ),  $F$ -statistic test, and  $t$ -statistic test (Wahyudi 2016).

This study's factors included household income, number of household members, age of the head of household, education level of head of household and housewife, region, gender of head of household, and household welfare level. Household income was the amount of money received by the household, which

was estimated based on the total monthly spending. The area type was determined using a dummy scale (1 = urban; 0 = rural). Similarly, the gender of the head of the home was measured using a dummy scale (1 = female, 0 = male).

Food consumption expenditures can be used to measure welfare (Sintha 2019). Increased purchasing power leads to higher household spending. High purchasing power typically reflects higher household welfare. Kumar *et al.* (2011) found that the higher the income, the lower the allocation (distribution) for cereal expenditure, indicating that household welfare improves. This study divided household welfare into two categories: prosperous and not yet prosperous, based on food spending percentage. The spending percentage was computed by dividing the spending by total household expenditure and multiply by 100%. Prosperous households have a food expenditure proportion below 60%, while less prosperous households have a food expenditure percentage above 60%. This welfare level classification was measured using a welfare level dummy variable (1 = prosperous household; 0 = less prosperous).

## RESULTS AND DISCUSSION

### Characteristics of Households

The 2019 National Socioeconomic Survey (Susenas) results in Lampung Province showed that the average monthly family income was IDR 3,067,112.82. In terms of region type, urban areas have greater average monthly household incomes than rural areas. The average monthly income for households in urban regions was IDR 3,848,623.19, while in rural areas it was IDR 2,831,422.79. Most households in Lampung Province have an average

income above the poverty line (Figure 1). Households with incomes below the poverty line are called impoverished. According to BPS (2020), the family income poverty line in Lampung Province in 2019 was IDR 1,966,052.00.

The average monthly household expenditure on food and non-food products was IDR 1,672,553.65 and IDR 1,394,559.16, respectively, with food and non-food items accounting for 57.15% and 42.84% of total spending. The high percentage of food spending implies that Lampung Province's households are still not prosperous. Deaton and Muellbauer (1980) found that the wealthier a household is, the lower the proportion of food expenditure share of food, and *vice versa*.

Lampung Province's household characteristics suggest that 89.51% of the 9,046 households are headed by men. Table 1 shows that 5,161 households (57.05%) have 3-4 individuals. Most household heads was of productive age (88.52%), with the largest percentage falling between the ages of 36 and 45 (27.81%). Productive age is defined as the age at which a person is still capable of working and producing something, which ranges from 15 to 65 years old.

Most household heads had an elementary school education (31.65%), whereas 23.55% did not complete elementary school or did not attend school (Table 1). It is also worth noting that 33.43% of housewives did not attend or graduated from elementary school. The government must address the poor level of education since education is a basic human requirement. A good education connects with increased knowledge and sophisticated thinking. Furthermore, according to Aini *et al.* (2018), education is an essential component that instills morality in individuals and serves as a societal method of reaching a better living. This suggests that the higher a person's education level, the more likely it

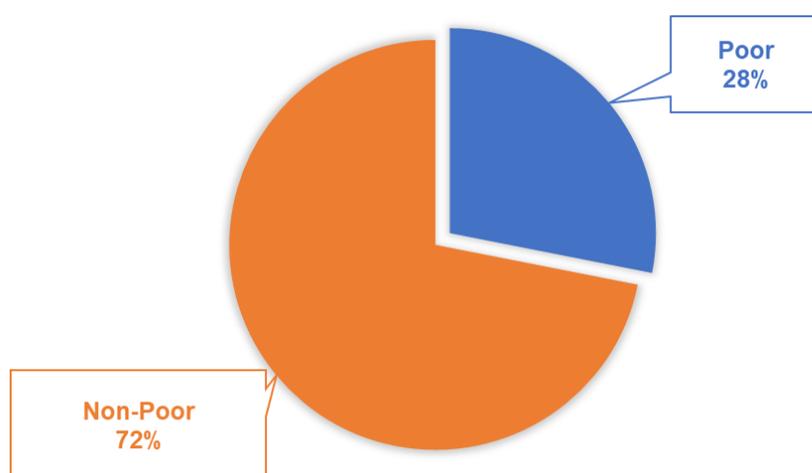


Figure 1 Percentage of households based on the poverty line.

Table 1 Characteristics of households in Lampung Province in 2019

Variable	Frequency (n = 9,046)	Percentage (%)
Number of household members (person)	1–2	20.04
	3–4	57.05
	> 5	22.91
Head of household's age (yr)	16–25	1.93
	26–35	15.44
	36–45	27.81
	46–55	25.92
	56–65	17.42
	>65	11.46
Head of household education (level)	Not elementary school graduate	23.55
	Elementary school	31.65
	Junior high school	19.58
	Senior high school	20.66
	Diploma and bachelor's degree	4.57
Housewife's education (level)	Not graduated from elementary school	33.43
	Elementary school	26.63
	Junior high school	20.01
	Senior high school	15.19
	Diploma and bachelor's degree	4.74
Area type dummy	Urban	23.17
	Rural	76.83
Gender	Male	89.51
	Female	10.49
Welfare level	Prosperous	25.02
	Not yet prosperous	74.98

is that that person will be able to support a better life in relation to their salary. Furthermore, Wijaya *et al.* (2020) found that having a poor level of education leads to less work chances. This survey also found that 6,950 households (78.62%) live in rural areas, with the remainder in urban areas. In terms of welfare, it indicates that many households are still poor (74.98%), with only 25.02% being rich.

### Diversity of Household Food Consumption

Lampung Province's average BI value was 0.826, with a standard deviation of 0.0028. Table 2 shows the average value and standard deviation used to categorize household consumption diversification levels in this study. Food consumption diversification is classified into three levels: low ( $BI_i < 0.788$ ), moderate ( $0.788 \leq BI_i \leq 0.864$ ), and high ( $BI_i > 0.864$ ). According to the classification, most households fall into the moderate diversification category, accounting for 72.65%.

BI values differ depending on the socioeconomic features of society. the BI values of homes by socioeconomic group and the average household income and the share of food expenses (Table 3). Although a small difference, female-headed families had a higher BI than male-headed households. Further investigation reveals that female-headed households

had a lower average income than male-headed households, and they spend a lesser percentage of their income on food than male-headed households. This demonstrates that women may effectively allocate their income, resulting in greater food diversification. Taruvinga *et al.* (2013) found that female-headed households are more likely to diversify their food consumption than male-headed households because women spend more money on higher-quality, more nutritious food. Similarly, Mayasari *et al.* (2018) reported that women play a greater role in determining the proportion of household food.

Based on the number of household members, there is a pattern in which the BI value decreases with increasing household size. The group with three or four household members had the greatest BI score (0.828). This is consistent with the findings of Dewanti *et al.* (2020), that families with more than 4 members are less likely to be more diverse.

When BI scores are studied by age group, no pattern emerges; however, a pattern emerges when seen by education group, both for the head of the household and the housewife. The higher the educational level of the head of family and the housewife, the higher the BI ratings. This condition is consistent with the findings of Dewanti *et al.* (2020) and Musta'in and Saputro (2021), that more education

Table 2 Level of household food consumption diversity in Lampung Province in 2019

Level of food consumption diversification	Frequency ( $n = 9,046$ )	Percentage (%)
Low diversification ( $Bli > \bar{x} + SD$ ) = $Bli < 0.788$	1,312	14.50
Middle diversification ( $\bar{x} - SD \leq Bli \leq \bar{x} + SD$ ) = $0.788 \leq Bli \leq 0.864$	6,572	72.65
High diversification ( $Bli < \bar{x} - SD$ ) = $Bli > 0.864$	1,162	12.84

Remarks:  $Bli$  = Berry Index,  $\bar{x}$  = average of Berry Index,  $SD$  = standard deviation.

Table 3 Household IB value, income, and percentage of food expenditure by socioeconomic group in Lampung Province in 2019

Variable	Average BI	Average household income (IDR/month)	Percentage of food expenditure (%)
<b>Gender</b>			
Male	0.826	3,140,327.51	57.54
Famale	0.828	2,442,434.95	53.87
<b>Number of household members (person)</b>			
1–2	0.827	2,064,730.93	55.05
3–4	0.828	3,133,671.93	56.95
> 5	0.819	3,778,409.56	59.50
<b>Age of household head (yr)</b>			
16–25	0.822	2,453,010.52	55.72
26–35	0.826	2,912,936.30	58.08
36–45	0.826	3,262,162.20	57.13
46–55	0.827	3,324,048.28	56.24
56–65	0.825	3,062,874.37	57.28
>66	0.824	2,330,636.87	58.08
<b>Education of household head (level)</b>			
Not graduated from elementary school	0.820	2.414.395,71	59,32
Elementary school	0.824	2.819.366,89	59,10
Junior high school	0.827	2.988.442,10	57,74
Senior high school	0.833	3.731.028,14	53,97
Diploma and bachelor's degree	0.837	5.483.703,97	44,38
<b>Housewife's education (level)</b>			
Not graduated from elementary school	0.821	2.526.056,28	57,95
Elementary school	0.822	2.934.807,45	59,39
Junior high school	0.829	3.068.287,72	57,91
Senior high school	0.835	3.741.547,73	54,10
Diploma and bachelor's degree	0.837	5.458.904,25	45,48
<b>Area type dummy</b>			
Rural	0.823	2.831.422,79	58,20
Urban	0.836	3.848.623,19	53,68
<b>Welfare level</b>			
Prosperous	0.819	2.556.553,05	67,27
Not yet prosperous	0.825	3.470.207,59	49,17

gives people with better knowledge about the types of food they will consume. This is frequently accompanied by an increase in the diversification of food consumption.

Table 3 further demonstrates that higher levels of education correlate with higher average household income. According to Fadli (2013), the head of the household's education level has a general influence on household income. This is also expected to increase

the level of food consumption diversity. With greater income, households' access to food improves, allowing them to buy a wider range of food goods. According to regional features, urban households are more diverse in their food intake than rural families, with average BI values of 0.836 and 0.823, respectively. This study's findings disagree from Miranti's (2017) findings in West Java Province, which indicated a very minor difference

between urban and rural BI values, with rural areas slightly higher (urban 0.799 and rural 0.803).

According to Table 3, rich households have a somewhat higher BI value (0.825) than less prosperous households (0.819). This phenomenon is consistent with Bennet's law, that as prosperity grows, consumption patterns will shift from rice-based foods to more varied foods rich in fiber and vitamins (fruits and vegetables) and protein, namely milk and meat (Godfray 2011).

### Determinant of Household Food Consumption Diversity

The findings of the multicollinearity test indicate that there is no multicollinearity in this research data. The VIF values in this model range from 1.087 to 1.935 (Table 4). According to Wahyudi (2016), the lack of variables with VIF values >10 suggests that there is no multicollinearity in this model. The next test is the White test, which investigates heteroscedasticity. Table 5 shows the results of the White test, with a Chi Square Prob. value of 0.000. This value implies an issue with heteroscedasticity in the model (Wahyudi 2016). To address the issue of heteroscedasticity, the White

Heteroscedasticity Consistent Coefficient Covariance (White-HC) approach was used. The standard error of the White-HC test results was then compared to the first OLS analysis to determine the extent of the heteroscedasticity issue. Table 6 shows a comparison of the standard errors for the White-HC test and the first OLS test. The White-HC test has a standard error value of no more than 1.5× that of the first OLS method. This requirement shows that heteroscedasticity in the model is not a severe problem (Wahyudi 2016). Furthermore, the White-HC Analysis was performed to identify the factors of food consumption diversification.

Table 7 shows that the *R*-square value of this model is 0.1419, meaning that 14.19% of the variation in household food consumption diversification can be explained by the variables of income, number of household members, age of the head of the household, education of the head of the household, education of the housewife in the household, regional dummy, the head of household gender dummy, and the welfare level dummy included in the model. The small coefficient of determination value shows that many variables have not yet been included in the model. This happens because the research data is secondary,

Table 4 Results of multicollinearity test

Variable	Coefficient of variance	Uncentered VIF	Centered VIF
C	0.000169	1235.468	NA
Ln_X <sub>1</sub>	7.43E-07	1191.863	1,565366
Ln_X <sub>2</sub>	1.12E-06	13.49138	1,492580
Ln_X <sub>3</sub>	2.34E-06	254.6510	1,343290
Ln_X <sub>4</sub>	2.81E-07	7.379930	1,866181
Ln_X <sub>5</sub>	2.63E-07	6.431754	1,935948
D1	8.34E-07	1.414937	1,087090
D2	1.73E-06	1.326496	1,187335
D3	6.47E-07	2.647316	1,168260

Remarks: X1 = Income of household (IDR/month), X2 = Number of household members (person); X3 = Age of household head (yr); X4 = Education of household head (level), X5 = Education of housewife education (level); D1 = Dummy of area; D2 = Dummy of household head gender; D3 = Dummy welfare level

Table 5 Result of White-test

<i>F</i> -statistic	11.33792	Prob. F(9,9036)	0.0000
Obs* <i>R</i> -squared	101.0135	Prob. Chi-Square(9)	0.0000
Scaled explained SS	132.7064	Prob. Chi-Square(9)	0.0000

Table 6 Comparison of the standard error values of the initial OLS test with the White-HC test.

Variable	Std. Error of OLS initial test	Std. Error of White-HC test
C	0.012991	0.013930
Ln_X <sub>1</sub>	0.000862	0.000939
Ln_X <sub>2</sub>	0.001059	0.001219
Ln_X <sub>3</sub>	0.001531	0.001608
Ln_X <sub>4</sub>	0.000530	0.000568
Ln_X <sub>5</sub>	0.000512	0.000552
D1	0.000913	0.000837
D2	0.001314	0.001294
D3	0.000805	0.000812

Remarks: X1 = Income of household (IDR/month), X2 = Number of household members (person); X3 = Age of household (yr); X4 = Education of household head (level), X5 = Education of housewife (level); D1 = Dummy of area; D2 = Dummy of household head gender; D3 = Dummy welfare level

hence the number of variables is limited by the data source (Susenas). Furthermore, Mayasari *et al.* (2018) attribute the low *R*-square value to the use of cross-sectional data with a high level of heterogeneity. Susenas data is cross-sectional. According to Gujarati (2010), low *R*-square is not a problem because cross-sectional data contains a large number of observations and is diverse. The regression model used in this investigation is as follows:

$$BI_i = 0,436 + 0,026 \ln\_X1 - 0,022 \ln\_X2 + 0,003 \ln\_X3 - 5,97E^{-05} \ln\_X4 + 0,003 \ln\_X5 + 0,005 D1 + 0,002 D2 - 0,003 D3 + \epsilon_i$$

The *F*-statistic test findings in this study's regression model have a significance value, or Prob (*F*-statistic), of 0.0000. This value is less than 0.01, indicating that the variables household income, number of household members, age of the head of the household, education of the head of the household and housewife, region dummy, gender dummy of the head of the household, and welfare level dummy all have a significant effect on household food consumption diversification at a 99% confidence level (Table 7).

This study's *t*-test results show a partial effect of household income (X1), number of household members (X2), age of the head of the household (X3), level of education of the housewife of the household (X5), regional dummy (D1), head of household gender dummy (D2), and welfare level dummy (D3) on the level of diversification (BI) with a 99% confidence level for all variables. Among the factors in the model, only the head of the household's level of education (X4) had no significant effect on BI. The next section provides a description of the influence of each variable.

### Household Income

Household income variables have a substantial positive effect on BI (regression coefficient = 0.026811), indicating that as household income rises, so does the diversity of food consumption. These findings are consistent with previous study by Alexandri *et al.* (2015), Rinaldi *et al.* (2017), Taruvinga *et al.* (2013), and Qineti *et al.* (2017), that increasing wealth increases food consumption diversification. Households with higher earnings have more options for purchasing higher quality food in sufficient quantities (Gevisioener *et al.* 2015).

### Number of Household Members

At a 99% confidence level, the number of household members has an impact on household food consumption diversity. The regression coefficient for this variable was  $-0.022333$ . A negative correlation indicates that the number of household members increases as food variety decreases. The findings are consistent with those of Dewanti *et al.* (2020), Ismiasih *et al.* (2013), and Qineti *et al.* (2017), that the number of household members has a negative impact on food consumption diversification. An increase in the number of household members increases the head of household expenditure burden. Because of this increased burden, households prioritize food quantity over food variety when allocating funds.

### Age of the Head of Household

Table 7 shows that the age of the head of home has a substantial impact on household food consumption diversification ( $\alpha = 0.01$ ). The regression coefficient for the age of the head of family variable is 0.003934, implying that the older the head of household, the more diverse the household food intake. Firdaus and

Table 7 Results of the analysis of determinants of household food consumption diversification in Lampung Province in 2019

Variable	Coefficient	Std. error	<i>t</i> -statistic	Prob.
C	0.436048***	0.013930	31.30310	0.0000
Ln_X1	0.026811***	0.000939	28.54434	0.0000
Ln_X2	-0.022333***	0.001219	-18.32086	0.0000
Ln_X3	0.003934***	0.001608	2.446684	0.0144
Ln_X4	-5.97E-05 <sup>is</sup>	0.000568	-0.105095	0.9163
Ln_X5	0.003554***	0.000552	6.435240	0.0000
D1	0.005238***	0.000837	6.256862	0.0000
D2	0.002671***	0.001294	2.065194	0.0389
D3	-0.003173***	0.000812	-3.908578	0.0001
<i>R</i> -squared	0.141972			
Adjusted <i>R</i> -squared	0.141212			
SE of regression	0.035152			
<i>F</i> -statistic	186.9112			
Prob ( <i>F</i> -statistic)	0.000000			

Remarks: X1 = Income of household (IDR/month), X2 = Number of household members (person); X3 = Age of household (yr); X4 = Education of household head (level), X5 = Education of housewife (level); D1 = Dummy of area; D2 = Dummy of household head gender; D3 = Dummy of welfare level.

Cahyono (2017) found similar results in Yogyakarta and East Nusa Tenggara, as did Dewanti *et al.* (2020) in Central Java. It is probable that when the age of the head of the family rises, the household's livelihood position improves, resulting in an increase in revenue, which will have an impact on dietary diversity.

### Education of the Head of Household and the Housewife

The findings of this study show that the education level of the family's head has no significant effect on household food consumption diversification, however the education level of the housewife does. The regression coefficient value for the housewife's education variable was 0.003554 (positive), indicating that higher education increases family food diversification. According to Sanjur (1982), housewives are the gatekeepers of home food consumption, which means women are the determinants of household food. Housewives with a higher degree of education are more likely to be able to choose good (diversified) food, so this study supports this hypothesis. This is consistent with Sayekti *et al.* (2020), that education is one of the social determinants influencing food intake. Housewives with higher levels of education have more knowledge and insight into nutrition, resulting in more varied food preparation (Amugsi *et al.* 2016; Hamid *et al.* 2013; Heim & Paksi 2019; Hutauruk & Prihanto 2017).

### Residence Location

The findings of this study show that household food consumption diversification is influenced by home location type at a 99% confidence level. Urban households have more diverse food consumption patterns (0.005) than rural households. The findings are consistent with previous study by Alexandri and Kevorchian (2015), Hamid *et al.* (2013), and Qineti *et al.* (2017), that household food consumption variety is higher in urban regions than in rural areas. This is because metropolitan areas typically have a more variety and abundant supply of food, as well as higher spending power among urban populations. Furthermore, the higher average household income in metropolitan areas compared to rural ones can improve purchasing power for food. This is not the case for rural households, as their lower income restricts their access to food in terms of quantity, quality, and diversity.

### Gender of Household Head

This study found that the gender of the head of family had a significant influence on food intake variation ( $\alpha = 0.01$ ). According to the findings, homes led by women exhibit greater variety in food consumption than those led by males. The findings of this study are consistent with those of Ochieng *et al.* (2017), that families led by women have much more diverse food intake than those led by men. According

to Taruvinga *et al.* (2013), the increased food variety in female-headed families is related to women's/mothers' stronger experience managing food consumption. This leads to a more diverse variety of food. According to Amugsi *et al.* (2016), women's decisions on household food purchases can have a positive impact on food intake, which is strongly linked to consumption diversity. This is consistent with Mehraban and Ickowitz's (2021) claim that women have been shown to have an essential role in altering family eating habits.

### Welfare Level of Household

At a 99% confidence level, welfare has a considerable but negative effect on family food consumption diversification. Welfare households exhibit lower food consumption variation than non-welfare households. The findings of this study differ from those of Mayasari *et al.* (2018), that household wellbeing levels have a favorable effect on food quality and quantity consumed. This study's findings are an outlier, most likely due to the association with food purchasing patterns, which show that prosperous households buy more prepared foods than less prosperous households. Prosperous households spend an average of 25.93% of their income on prepared foods, compared to 23.03% in less prosperous households. Ready-to-eat foods cost more expensive than fresh items.

## CONCLUSION

Diversity of household food consumption in Lampung Province is moderate, with a BI ranges from 0.788 to 0.864. In the province, the following factors influence household food consumption diversification: household income, number of household members, age of the head of household, education of the head of household and the wife, type of household area, gender of the head of household, and household welfare level.

The findings of this study support the hypothesis of women (housewives) as gatekeepers in family food consumption, implying that food selection in families is mostly affected by housewives' knowledge and skills in selecting quality food. As a result, to diversify household food consumption, this knowledge and skill set must be improved. This can be accomplished by widespread socialization and promotion of diverse food consumption habits via appropriate media.

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