CONSUMPTION ANALYSIS OF SELECTED VEGETABLES AT HOUSEHOLD LEVEL IN YOGYAKARTA SPECIAL PROVINCE

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ABSTRACT

Objectives of the study are: (1) to analyze factors that affect the consumption of vegetables at low, intermediate, and high income levels of households in rural and urban areas of Yogyakarta Special Province, (2) to calculate the own proce elasticity with the consumption of each category of intermediate and high income levels.

The Study applies SUSENAS vegetables consumption data of the year os 2002 at Yogyakarta Special Province. The preferred vegetables consumed by people are spinach, string bean, carrot, cassava leaf and egg plat. The total number of respondents is 1226 households at urban area. The censored regression analysis or tobit analysis is the one to analyze the differention of low, intermediate and high income households.

The result of the study indicates that spinach, string bean, carrot, cassava leaf and egg plant are the vegetables for most households in Yogyakarta Province with an inelastic demands. Furthermore, their consumption are affected by education level and the scale of families. The consumption of each type of vegetables in three levels of income both in rural and urban areas had less-affected by the change in proce of other vegetables (substituted vegetable). The result also shows that income of each households in the rural and urban had influenced the consumption of spinach, string bean, carrot, cassava leaf, and eggp plant.

***Key Words**: Consumption, Vegetable, Elasticity, Tobit Analysis.*

INTISARI

Penelitian ini bertujuan untuk: (1) untuk menganalisis faktor-faktor yang mempengaruhi konsumsi per-jenis sayuran pada rumah tangga tingkat pendapatan rendah, menengah, tinggi di pedesaan dan perkotaan di Daerah Istimewa Yogyakarta (DIY), (2) untuk menghitung elastisitas harga sendiri, harga silang, dan elastisitas pendapatan dari konsumsi per-jenis sayuran (bayam, kacang panjang, wortel, ketela pohon, dan terung) pada rumah tanggga tingkat pendapatan rendah, menengah tinggi.

Penelitian ini menggunakan data konsumsi sayuran SUSENAS pada tahun 2002 di DIY. Sayur-sayuran yang disukai masyarakat adalah bayan, kacang panjang, wortel, ketela pohon dan terung. Jumlah responden yang diteliti adalah 2628 rumah tangga (RT) dan dikelompokkan 1402 untuk perdesaan dan 1226 untuk perkotaan. Analisis menggunakan model tobit atau model regresi tersensor dengan membedakan rumah tangga berdasarkan tingkat pendapatan rendah, menengah, dan tinggi.

Hasil penelitian menunjukkan bahwa kebanyakan rumah tangga di DIY menganggap bayam, kacang panjang, wortel, ketela pohon, dan terung adalah barang kebutuhan pokok yang permintaannya bersifat in-elastis. Tambahan lagi, konsumsi itu dipengaruhi oleh tingkat pendidikan dan jumlah anggota keluarga. Pada tiga tingkat pendapatan di pedesaan dan perkotaan, konsumsi per-jenis sayuran kurang terpengaruh perubahan harga sayuran substitusi. Penelitian ini juga menunjukkan bahwa perbedaan tingkat pendapatan di perkotaan kurang berpengaruh terhadap konsumsi bayam, kacang panjang, wortel, ketela pohon, dan terung.
***Kata kunci**: Konsumsi, Sayur-sayuran, Elastisitas, Analisis Tobit.*

INTRODUCTION

In Indonesia, with a total vegetable production of 7.9 million ton in 1996 (on an area of 928.000 ha), vegetable aviability is approximately 38 kg/year per person. This per capita aviability is clearly insufficient to meet the FAO's nutritional recommendation of 200 *gram* of vegetables per capita per day (65 kg/year). Indonesia is expected to face vegetable demands which increasingly evceed supplies (Jansen, 1992). This deficit is likely to become more serious due to a virtually stagnant supply and the estimated total population growth that remains at an average of 1.9% per annum until the year of 2000. Hence, is there are no changes in the supply grosth patterns, per capita aviability of vegetables in Indonesia may continue to decrease.

As estimated by the World Bank, vegetable consumption in Indonesia will increase by an average of 3.9% per year during the period of 1995-2010 (Pasandaran & Hadi, 1994). In general, it is abovious that vegetable production must be increased to remedy present inadequate aviability and keep pace with the income and population growth. It should be noted though that the future demand pressure is expected to especially high in and around urban areas. This expectation is actually supported by some facts, such as (a) urban communities will expand as rural population seeks higher incomes in the towns and cities-World Bank's projection indicates that in 2005, urban population will increase approximately 37%, (b) high dependence of people in urban areas on market supplis for their food consumption, (c) people in urban areas usually heve higher incomes and faster income growth than rural areas. Urban population growth in Indonesia is projected approximately 7.4% per annum, while in rural areas is expected to decrease further at (-) 1.6% per annum. Therefore, per capita vegetable consumption expenditure for urban population is expected four times than that of the rural population (Van Lieshout, 1992).

METHODOLOGY

The study is conducted in *Yogyakarta Province*. It is executed with the coverage of entire regions, sub-provinces/city with the amount sample of 2628 RT[1]. The interview with all those households will be taken by Kor and Module. It had been done in February, 2002 and the counting inspection of resulted list had been inspected by Provincial BPS and had been done during March-April. The study applies raw data SUSENAS together with the total number of households' samples 2628 RT which will be divided 1402 samples for rural area and 1226 samples for urban area.

[1] Rukun Tetangga (District Society)

The types of data collecting are related to the research of vegetables' consumption (spinach, string bean, carrot, cassava leaf and eggplant). The data covers the consumption of any kind of vegetables, the price of each vegetable, income of each household, total number of members in each family, educational level of housewives, location of their accommodations (rural or urban areas).

Analysis model covers the analyzing of each category of vegetables at any households levels of low, intermediate, and high income in rural and urban areas. The analysis model in this research could be written as the following:

$$Y_{1-5} = \hat{\beta}_0 + \hat{\beta}_1 + \hat{\beta}_2 Pspi + \hat{\beta}_3 Pstb + \hat{\beta}_4 Pcrt + \hat{\beta}_5 Pcal + \hat{\beta}_6 Pegp + \hat{\beta}_7 Edu + \hat{\beta}_8 Mof + \varepsilon_i$$

Description:

Y1 = consumption of spinach in each householders during a month (kg/mth)
Y2 = consumption of string bean in each householders during a month (kg/mth)
Y3 = consumption of carrot in each householders during a month (kg/mth)
Y4 = consumption of cassava leaf in each householders during a month (kg/mth)
Y5 = consumption of eggplant in each householders during a month (kg/mth)
Pspi = price of spinach (Rp/kg)
Pstb = price of string bean (Rp/kg)
Pcrt = price of carrot (Rp/kg)
Pcal = price of cassava leaf (Rp/kg)
Pegp = price of eggplant (Rp/kg)
I = income of each families (Rp/mth)
Edu = education of each housewives (year)
Mof = member of family in each households (person)

$\hat{\beta}_0$ = intercept

$\hat{\beta}_1 - \hat{\beta}_8$ = coeficient of regression

ε_i = intruder variable (error)

Using the analysis model in the purpose of analyzing some factors that affect the consumption of vegetables and it is applying to censored data. For instance, the consumption data of SUSENAS is matching to ***Tobit*** Model (*The censored Regression Model*) (Onianti, 2002).

According to Green (1993), to estimate such model of censored regression, it will be used *the maximum likehood estimation (MLE)* and it could be described in the characteristic of logarithm as the following:

$$LnL = \sum_{y_i y_0} -\frac{1}{2}\left[Ln\,(2\pi) + Ln\,\sigma^2 + \frac{(y_i - \beta' x_i)^2}{\sigma^2} \right] + \sum_{y_i = 0} Ln\left[1 - \Phi\left(\frac{\beta' x_i}{\sigma} \right) \right]$$

Description:

Y_i = consumption of Vegetables

β = coefficient variables in model

X_i = independent variables in model

Onianti (2002) added that use of an equation is estimated in order to count the value of the elasticity of its own price, cross-price elasticity and income elasticity. These cases could be reached in detail as :

1. To count the value elasticity of its own price from the consumption of each categories of vegetables, the formula indicated that:

$$Ey,op = \beta opx \left[\frac{C}{C + NC} \right] x \frac{Pov}{Y}$$

2. To count the value of cross-price elasticity from the consumption of each categories of vegetables, the formula indicated that :

$$Ey,cp = \beta cpx \left[\frac{C}{C + NC} \right] x \frac{Ps}{Y}$$

3. To count the value of income elasticity from the consumption of each categories, the formula indicated that :

$$Ey,i = \beta ix \left[\frac{C}{C + NC} \right] x \frac{I}{Y}$$

Description :

Ey,op= elasticity of its own price from the consumption of each vegetables

Ey,cp= croos-price elasticity from the consumption of each vegetables

Ey,I = income elasticity from the consumption of each vegetables

C = consumption of each vegetables by householders

NC = non consumption of each vegetables by householders

C/C+NC = proportion on householders who consume each of vegetables

β op = coefficient regression variable of vegetables themselves

β cp = coefficient regression variable of other vegetables (substituted of complementary vegetables)

β i = coefficient regression variable of income

Pov = an average price of its own vegetables

Ps = an average price of other vegetables (substituted or complementary vegetables)

I = an average income of householders

Y = an average consumption of each vegetables by householders

β x C/(C+NC) = Marginal effect

RESULTS AND DISCUSSION

Consumption Elasticity of Spinach

Elasticity of own price (E_{op}) in table 1 indicates that spinach in rural area at the low income is -0.6783, intermediate income is -0.3238 and high income household is 0.1978. They are considered as inelastic demand of vegetable ($E_{op}<1$). So in reality; people in rural and urban area for the tree levels of income like consuming it even the change in price.

Table 1. Own Price, Cross Price and Income Elasticity of Spinach Consumption Based on Income Level of Hoeseholds in Yogyakarta Province, 2002

Income Level	Elasticity of Own price	Cross Price Elasticity				Elasticity of Income
		String Bean	Carrot	Cassava leaf	Egg Plant	
Rural Area						
Low	-0.6783***	0.3540**	1.3517	-0.4558	-0.5946	-0.1621
Intermediate	-0.3238***	0.6185	0.1797	-0.2333***	-0.3942***	-0.5963
High	0.1978***	-0..9122*	-0.1615	-0.1144	-0.3985**	-0.3590
Urban Area						
Low	-09746***	1.5728	-0.6383	-0.2587***	-1.1449	1.1668*
Intermediate	-0.3032***	-0.3903	0.9785	1.2029	-0.9805	-1.1490
High	0.1693***	-0.4631	0.3307***	0.4705	-0.9855	0.3962**

Source: Analysis of SUSENAS Data DIY, 2002
*** Significant at trusted level 99%
** Significant at trusted level 95%
* Significant at trusted level 90%

Cross price elasticity (E_{cp}) is a change in the price of some other commodity (string bean, carrot, cassava leaf or egg plant), will cause a shift in the demand for spinach. The conclusion could drawn from the rural and urban areas at the three levels of income. Fisrt, in rural area, for low income level could be evaluated that carrot, cassava leaf and egg plant have no significant towards spinach; so its relation is approaching vegetable. In contrast, only string bean has positive significant substitution with spinach and its value is 0.3540. At intermediate level, cassava leaf and egg plant are the complementary vegetables with spinach in the values of -0.2333 and -0.3942. Then the two other vegetables, string bean and carrot are independent because they have no any significant relations with spinach. However, for high income level; carrot and cassava leaf are independent. But string bean and egg plant are the complementary vegetables with spinach in the values of -0.9122 and -0.3985.

Second, cross price elasticity (E_{cp}) in urban area for low income households indicates that string bean, carrot, and egg plant are independent towards spinach. But, cassava leaf is complementary vegetable with the value of -0.2587. For intermediate households, the four categories of vegetable are independent because there is no significant sign towards spinach. Then, for the high income level; carrot is a substituted vegetable for spinach with its value 0.3307 and egg plant is a complementary vegetable with its value -0.9855. The other kinds, string bean and cassava leaf are categorized as an independent.

Anyway, elasticity of income (E_i) in the table 1 added that in the low income level at rural area the consumption of spinach is -0.1621, intermediate income level is -0.5963, and high income level is -0.3590. So spinach is considered as an inferior goods ($E_i<0$). In urban area, just only at intermediate level suppose spinach as inferior goods with its value 1.1668 ($E_i>1$) and high income level considers spinach as necessity goods with its value 0.3962 ($0<E_i<1$).

Consumption Elasticity of String Bean

Cross price elasticity (E_{cp}) in rural area, for low income level from table 2 could be concluded that spinach, carrot, cassava leaf and egg plant have no significant towards spinach; they are the independent vegetables. At intermediate level only cassava leaf has positive significant substitution with string bean and its value is 0.2828 ($E_{cp}>0$), then the apinach, carrot and egg plant are independent. In addition, at high income level; spinach, carrot and cassava leaf are independent expect egg plant is substituted vegetable for string bean because its value is 0.9912 ($E_{cp}>0$). In urban area for low and high income households, all vegetables are independent. However, for intermediate level carrot is the complementary vegetable to string bean with its value -0.8421 ($E_{cp}<0$), and cassava leaf is substituted vegetable with the value of 0.6585 ($E_{cp}>0$); the rest of vegetables are independent.

Table 2. Own Price, Cross Price and Income Elasticity of String Bean Consumption Based on Income Level of Hoeseholds in Yogyakarta Province, 2002

Income Level	Elasticity of Own price	Cross Price Elasticity				Elasticity of Income
		Spinach	Carrot	Cassava leaf	Egg Plant	
Rural Area						
Low	-0.8662***	0.9529	0.2726	-0.4559	0.6127	0.4348
Intermediate	-0.5985***	0.7775	-0.5280	0.2828**	0.3142	1.2442***
High	0.4593***	1.1913	-0.4276	0.2996	0.9912**	0.4509
Urban Area						
Low	-3.0002***	1.1005	0.5484	-2.5374	-2.9707	2.5283
Intermediate	0.8911***	-1.2539	-0.8421***	0.6585***	-0.2709	-1.5724
High	0.6904***	1.6635	-0.6869	0.5381	-0.5594	-1.0291

Source: Analysis of SUSENAS Data DIY, 2002
*** Significant at trusted level 99%
** Significant at trusted level 95%
* Significant at trusted level 90%

Elasticity of income (E_i) in table 2 means that at rural area, for low and high income levels with the values of 0.4248 and 0.4509 are considered string bean as necessity vegetable ($0<E_i<1$), but for intermediate income level is 1.2442 which isluxurious vegetables ($E_i>1$). In urban area, string bean is counted into luxurious good at low income level with its value 2.5283 ($0<Ei<1$) and the intermediate and high income levels consider string bean as inferior goods ($E_i<0$) with the values of 1.5724 and -1.0291.

Consumption Elasticity of Carrot

Elasticity of own price (E_{op}) in table 3 shows that the value of carrot in rural area at the low income is -0.2405, and at intermediate income is -1.1599 so the price of carrot is inelastic ($E_{op}<1$). It means that when the price of carrot change to a certain amount, the consumption is not decrease. In contrast, at high income level is elastic ($E_{op}>1$) with the value of 1.2587. In this case, when the price of carrot change, people will get away from it and consume other vegetables as repalcement. In urban area, there is no different with the rural; because at low income level, the values of carrot is -0.1583 and at intermediate income with the value of -1.2214 are also inelastic because it is match to the formula ($E_{op}<1$). At the same time, for high income level is elastic with the value of ($E_{op}>1$).

Table 3. Own Price, Cross Price and Income Elasticity of Carrot Consumption Based on Income Level of Hoeseholds in Yogyakarta Province, 2002

Income Level	Elasticity of Own price	Cross Price Elasticity				Elasticity of Income
		Spinach	String Bean	Cassava leaf	Egg Plant	
Rural Area						
Low	-0.2045***	0.3352	-0.3296	-0.4025	0.3454	0.3236
Intermediate	-1.1599***	-0.4841**	-0.2976**	-1.1107***	-1.6217	1.3429**
High	1.2587***	-2.4271	1.6875	-0.5879	-1.0917	-1.3621
Urban Area						
Low	-0.1583	0.3469	-0.6217*	0.2796	-0.1456	0.4243
Intermediate	-1.2214***	-2.8212	-0.3494	1.5092	-0.5797**	0.4614**
High	1.2447***	0.3782	0.7409**	0.9538	0.6284	0.4290

Source: Analysis of SUSENAS Data DIY, 2002
*** Significant at trusted level 99%
** Significant at trusted level 95%
* Significant at trusted level 90%

Cross price elasticity (E_{cp}) section be drawn the conclusion that, in rural area; for low and high income levels there is no positive significant sign of spinach, string bean, cassava leaf and egg plant towards carrot; so their criteria is an independent vegetable. However, at intermediate level, there are three negative significant sign towards carrot. They are spinach with value -0.4841, string bean with value -0.2976, and cassava leaf with value -1.1107 that could be considered as complementary vegetable with carrot ($E_{cp}<0$) and it means that when the price of the three kinds of vegetable changed, there will be the change of the consumption of carrot. By the way, cross price elasticity (E_{cp}) in urban area for low income households indicates that only the string bean is the complementary vegetable to carrot ($E_{cp}<0$) with the value of -0.6217 and spinach, cassava leaf, and egg plant have no significant sign towards carrot consumption; so they are considered as independent. Then, for intermediate households, the three categories of vegetable (spinach, string bean an cassava leaf) are independent because there is no significant sign towards carrot but egg plant is the complementary vegetable to carrot with the value of -0.5797 ($E_{cp}<0$). After that, for the high income level; string bean is the substituted vegetable for carrot with its value 0.7409 ($E_{cp}>0$) but the other three kinds, spinach, cassava leaf, and egg plant arecategorized as an independent.

In addition, the elasticity of income (E_i) also concludes that in the low income level at rural area the value is 0.3236 which in considered as necessity goods ($0<E_i<1$), intermediate income level is 1.3429 which is called luxurious goods ($E_i>1$), and high income level is -1.3621 which is given the hypothesis as inferior goods ($E_i<0$). In urban area, all levels of income (low, intermediate and high) suppose carrot as necessity goods with its value 0.4243 and 0.4290 ($0<E_i<1$).

Consumption Elasticity of Cassava Leaf

Table 4 indicates that elasticity of own price (E_{op}) for cassava leaf in rural area at the low, intermediate and high income levels inelastic with the value of -0.4632, -0.2592, and 0.1782 ($E_{op}<1$). In urban area, the price of cassava leaf is inelastic as well for the three levels of income. The value of each level is -0.5982, -0.3024, and 0.1859.

Table 4. Own Price, Cross Price and Income Elasticity of Cassava Leaf Consumption Based on Income Level of Hoeseholds in Yogyakarta Province, 2002

Income Level	Elasticity of Own price	Cross Price Elasticity				Elasticity of Income
		Spinach	String Bean	Carrot	Egg Plant	
Rural Area						
Low	-0.4632***	0.1002	-0.7117	-0.1519***	-0.6069**	-0.2525
Intermediate	-0.2592***	-0.1629***	0.7005**	-0.2595***	-0.4567	-0.3879***
High	0.1782***	-0.4661	-0.0772	-0.0971	-0.1126	0.2107
Urban Area						
Low	-0.5982***	0.4705	-0.4675	-0.1545	0.3808	0.8294**
Intermediate	-0.3024***	-0.5148	-0.0634	0.6038	-0.1441	-0.2096
High	0.1859***	-0.1783	-0.0354	-0.0512	0.1190	0.0375

Source: Analysis of SUSENAS Data DIY, 2002
*** Significant at trusted level 99%
** Significant at trusted level 95%
* Significant at trusted level 90%

Cross price elasticity (E_{cp}) also could being seen from rural area that for low income level spinach and string bean are independent but carrot and egg plant are the complementary vegetables to cassava leaf with the value of -0.1519 and -0.6069 ($E_{cp}<0$). At intermediate level, spinach and carrot are the complementary vegetables with the value of -0.1629 and -0.2595 ($E_{cp}<0$) and string bean is substituted vegetable to cassava leaf with the value of 0.7005 ($E_{cp}>0$); then egg plant is independent. For high income level, all categories of vegetable are independent.

Furthermore, cross price elasticity (E_{cp}) in urban area for low income households indicates that spinach, string bean, carrot and egg plant are independent.Then, for intermediate households, spinach and carrot are also independent because there is no significant sign towards cassava leaf but string bean and egg plant are the complementary vegetables to cassava leaf with the value of -0.0634 and -0.1441 ($E_{cp}<0$). The last on is the high income level which is showing non significant for all vegetables towards cassava leaf, so spinach, string bran, carrot and egg plant ate independent.

By the way, the elasticity of income (E_i) also concludes that in the low and intermediate income levels at rural area consider cassava leaf as inferior goods with the

value of -0.2525 and -0.3879 (Ei<0) and for high level income consider cassava leaf as necessity goods with the value of 0.2107 (0<Ei<1). In contrast, in urban area, both low and high income levels consider cassava leaf as necessity goods with its value 0.8294 and 0.0375 (0<Ei<1) and for the intermediate income level think that cassava leaf is inferior goods with its value -0.1259 (Ei<0).

Consumption Elasticity of Egg Plant

The elasticity in table 5 indicates that first elasticity of own price (E_{op}) for egg plant in rural area at the low, intermediate and high income levels are inelastic with the value of -0.4819, -0.4607, and 0.2866 (E_{op}<1). In similarity, at urban area, the price of egg plant is also inelastic for the low, intermediate and high income levels which indicate the value of -0.1301, -0.2128, and 0.1610 (E_{op}<1).

Second elasticity of cross proce (E_{cp}) consludes that in rural area for low income level just only spinach that shows the negative significant sign towards egg plant with the value of -0.5149 (E_{cp}<0) as the complementary vegetable; and the rest of vegetables such as string bean, carrot, and cassava leaf are independent. At intermediate level, only cassava leaf is the complementary vegetable with the value of -0.1407 and spinach, carrot and string bean are the independent vegetables. For high income level, string bean, carrot and cassava leaf are independent expect spinach is subsitution vegetable to egg plant with its value 0.6473 (E_{cp}>0).

Table 5. Own Price, Cross Price and Income Elasticity of Egg Plant Consumption Based on Income Level of Hoeseholds in Yogyakarta Province, 2002

Income Level	Elasticity of Own price	Cross Price Elasticity				Elasticity of Income
		Spinach	String Bean	Carrot	Cassava Leaf	
Rural Area						
Low	-0.4819***	-0.5149*	-0.2768	-0.0890	-0.2486	0.2207
Intermediate	-0.4607***	-0.0711	-0.2996	-0.4589	-0.1407**	0.3594
High	0.2866***	0.6473*	-0.4304	-0.1106	-0.0646	-0.1259
Urban Area						
Low	-0.1301***	-0.7178	-0.5442	0.3169	-0.1554	-0.1944
Intermediate	-0.2128***	-0.1810	-0.0614	-0.0653***	0.0882	-0.2737
High	0.1610***	0.1406	-0.0411	-0.1675***	-0.2226	-0.2096

Source: Analysis of SUSENAS Data DIY, 2002
*** Significant at trusted level 99%
** Significant at trusted level 95%
* Significant at trusted level 90%

Whereas, cross price elasticity (E_{cp}) in urban are for low income households indicates that spinach, string bean, carrot and egg plant are independent. Then, for intermediate households, spinach, string bean and cassava leaf are also independent because there is no significant sign towards cassava leaf but there is only carrot that show the negative sign towards egg plant and it is considered as the complementary vegetables with the value of -0.0653 (E_{cp}<0). The high income level carrot is also consid-

ered as complementary vegetable towards egg plant with the value of -0.1675 ($E_{cp}<0$) and the rest are independent.

The final one is the elasticity of income (E_i). It further explains that at rural area, the low and intermediate income levels consider egg plant as necessity goods with the value of -0.2207 and 0.3594 ($0<E_i<1$) and for high level income consider egg plant as inferior goods with the value of -0.1259 ($E_i<0$). But slightly different from the rural, all income levels of households in urban area consider egg plant as inferior goods with its value -0.1944, -0.22737 and -0.2096 ($E_i<0$).

CONCLUSION AND SUGGESTION

Conclusion

1. In rural, the prices of spinach, string bean, carrot, cassava leaf, and egg plant at low income households are inleastic. String bean substitutes to spinach, carrot and egg plant are complemented to cassava leaf, and spinach is complemented to egg plant. Then, spinach and cassava leaf are an inferior goods; string bean, carrot, and egg plant are the necessity goods. For urban area, price of the five categories of vegetables are also inelastic. Cassava leaf is complemented to spinach; then string bean is complemented to carrot. People in the urban at low income level consider spinach, and string bean as luxurios goods; carrot and cassava leaf as necessity goods; and egg plant as inferior goods.
2. For intermediate income level in rural area, the price of spinach, string bean, cassava leaf; and egg plant are inelastic except carrot is elastic. Cassava leaf and egg plant are complemented to spinach and carrot; string bean is substituted to cassava leaf; spinach, string bean, and cassava leaf are complemented to each other. People in rural are consider spinach and cassava leaf as inferior goods, string bean and carrot as luxurious goods; and egg plant as necessity goods. By the way, in urban area; the price of spinach, string bean, cassava leaf; and egg plant are inelastic when the carrot price is elastic. String bean is subsituted to cassava leaf and complemented to carrot, and egg plant is complemented to carrot and cassava leaf. In addition, spinach, string bean, cassava leaf; and egg plant are also considered as inferior goods; and carrot as necessity goods.

Suggestion

According to the above conclusion analysis of selected vegetables at household level in Yogyakarta province, the suggestion could be the following steps:

1. All the vegetables are important to the human's health by bringing vitamins and calories, for such reason; spinach, string bean, carrot, cassava leaf; and egg plant are the available vegetables in Yogyakarta Province. Besides that, they are playing a crucial role as daily food for all people both in rural and urban areas. Basing on the study process, it could be evaluted that overall category of selected vegetables are the favorite consumption of people; and hopefully, households in both areas will increase consuming vegetables by being aware of its quality and quantity.
2. This study will be advantaged to those who are intended to further their researches on the selected vegetables' consumption at household levels (low, intermediate

and high) or the similar topics in the next upcoming years. Finally, it will be the necessary brighten torch accompanying the next researchers to bring with in order to break the darkness of the researches.

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