Differential Characteristics of Poor and Non-Poor Communities in Malaybalay City

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Abstract

Poverty is a multi-dimensional phenomenon. In this study, eight dimensions were considered: demography, economic activities, environmental sanitation, literacy and education, social welfare, food shortage and food threshold of 14,528 households of Malaybalay City, Bukidnon. Given these dimensions, discriminant analysis was used to establish the characteristics of poor and non-poor households on the basis of multiple responses on all households. The classification results reveal 87.9% of households were classified correctly into poor and non-poor groups. Initial results further revealed that literacy and education and environmental sanitation were the strongest predictors of the group classification. Furthermore, on the basis of the classification rule developed in the study, of the identified poor households only 32.14% were recipients of the poverty reduction program of the city while 67.86% of the recipients were actually non-poor. The classification rule developed by this study did not match the classification rule of the city. The analysis of this paper is certainly not of sufficient complexity to allow a comprehensive poverty reduction strategy for Malaybalay City to be devised entirely from this result. Nevertheless, it does provide policy planners with objective measures on the distribution of goods and services for poverty alleviation that might be realized from sectoral poverty reduction strategy. Policy planners should view this result as a guide to allocate resources for poverty reduction in a more informed evidence-based manner.

Keywords: differential characteristics, poverty, discriminant analysis

Introduction

Poverty is the lack of income of an individual or family in order to satisfy the basic needs. Basic needs include food, clothing, shelter, health care, education and information. If one is classified as living in poverty, it means that this household or individual is not having enough to feed and clothe, not having a job to earn a living, not having a land to grow one's food and other deprivation in well-being. These basic needs are dependent on the income of an individual or household.

As described by Albert and Collado (2004), there are essentially three steps to a poverty measurement system. One is choosing a welfare indicator. Second is establishing a poverty line considering a minimum acceptable standard of the welfare indicator that separates the poor from the non-poor. The third is aggregating poverty data. They added that in the Philippines, the National Statistical Coordination Board (NSCB) is in charge of releasing the official poverty statistics that are based on per capita income data sourced from the Family Income and

Expenditure Survey (FIES), a household survey conducted by the Philippine National Statistics Office (PNSO) every three years. Poverty is measured at the household level since this is the ultimate sampling unit of FIES. In this case, if a household is poor then all its members are considered poor. Also, if the household is non-poor, then all its members are non-poor.

Another measure of poverty is the Foster, Greer and Thorbecke (FGT) family of measures (1984) that includes Head-count Index, Poverty Gap Index and the Poverty Severity Index. Head-count Index gives the proportion of the population with a standard of living below the poverty line. This measure of poverty which is also called as the poverty incidence or poverty rate does not indicate how poor the poor are. The Poverty Gap Index, the average of the gaps between poor people's income and the poverty line, expressed as a ratio to the poverty line, shows the average depth of poverty. However, this measure is not sensitive to the distribution of living standards among the poor. Thus, Poverty Severity Index is another measure that uses the relative gaps as the weights. The higher the value of this index, the more unequal is the distribution of income among the poor.

Information on the differential characteristics of poor and non-poor communities could assist the government in designing effective policies for the reduction of poverty. Classifying who are the poor, how many, where they live, what are their sources of income, what are their means of livelihood, how they live are important data for the government to succeed in their intervention program to fight poverty.

Comparisons among households can be made to identify characteristics that can be used for poverty alleviation interventions. For instance, Albacea (2003) said that single nuclear families tend to be poorer than extended families and families with two or more non-related family members. Large families are also more likely to be poor than small families especially if most of the members of the family are not of working age.

In terms of education, people living in households where either the head has never been to school or at most reached grade school, are very likely to be poor. Better educated household heads usually have better paying occupations, and thus are less likely to be poor.

The poor appears to be disadvantaged in their access to basic needs, including housing conditions, safe sources of water supply, sanitation and even electricity. Reliance on unprotected water sources is high and most of them use pit toilets.

Efforts to reduce if not to eliminate inequalities in the utilization of basic services have been emphasized for the improvement of health, education and living condition of the households in Malaybalay city. As reported by NSCB (2009), poverty incidence of Malaybalay City is 34.6%. However, this present study will not measure the poverty incidence but to characterize the poor and non-poor families. Thus, the Local Government Unit collaborated with the academe to make a strategic intervention based on a careful examination of data on poverty, vulnerability and inequality. Albert and Ramos (2010) in their paper "Examining recent trends in poverty, inequality, and vulnerability" said that poverty is seen not to have substantial change since the start of the millennium (2000, 2003, and 2006), although the proportion of the population who were considered poor decreased from 33.6 percent in 2000 to 30 percent in 2003, the poverty rate in 2006 (32.9%) practically went back to what it was in 2000. They concluded that poverty has remained mostly unchanged and has also continued to be a predominantly rural phenomenon, with three

out of every four poor persons found in the rural areas. The continuing persistence of poverty necessitates the need to do a continuing conduct of research to go beyond the government programs on poverty alleviations and broad poverty lines and cutoffs and into research which will identify poverty groups by their characteristics, and validate the recipients of the poverty alleviation programs. The researchers believe that for different categories of the poor in different places, there are many different causes and conditions, which must be known specifically before appropriate policies and methods of implementation are decided.

This study focused on poverty status differentiation of the families in the city of Malaybalay based on the selected *demographic variables, economic variables, environmental sanitation, literacy and education, and social welfare.* The study used the data from the Malaybalay Integrated Survey System (MISS) conducted in the year 2009-2010.

The study also assessed the country's poverty reduction strategy and policy in the local level. With the identified poor families and their characteristics, the information gathered is used to monitor the impact of policy implementation in terms of its efficiency and effectiveness. The researchers tried to simplify the measure of the effectiveness and efficiency of the government's poverty alleviation programs implemented by checking whether the recipients are the identified poor families. If they are, the program is efficient and if they belong to the poor groups and are not recipients of any of the programs, there is a problem in their method of identifying beneficiaries.

Objectives of the Study

1. Determine the differential characteristics of poor and non-poor families at the household level in Malaybalay City; and
2. Examine the existing poverty alleviation programs of the city and match them with the results of the study.

Review of Literature

Despite the complexity of the concept of poverty it is important for policy makers, researchers, and social actors in general to have access to a quantitative assessment of the poverty situation. Quantitative knowledge is required both to follow changes over time in order to monitor the impact of policy implementation and to compare the situation in other localities. In order to understand the extent, nature, and determinants of rural poverty as a precondition for effective public action to reduce deprivation in the rural areas, Chaudhry et al. (2009) analyzed the impact of household's socioeconomic and demographic characteristics on poverty. Findings revealed that all poverty measures gradually increase with the increase in household size except those comprising six members. They concluded that the household size found most prone to rural poverty is one with 7-8 and above members or households, while a household of 1 to 2 members escape from the incidence of poverty.

Additionally, they stressed that according to human capital models, education is an important dimension of non-homogeneity of labor. Incidence of poverty, as well as its depth and severity are much higher among households with no educational attainment. However, there was an indirect relationship between labor force participation and the incidence, depth and severity of poverty. Similarly, dependency ratio has a significant impact on households' well being. This finding supports their hypothesis that poverty will

be more severe among those households with a higher dependency ratio.

In like manner, the age of the household head supports the current phenomenon of youth unemployment where considerable incidence, depth and severity of poverty are observed. Nearly half of the households in the age group of 20-35 are poor. The incidence, depth and severity of poverty decrease as the age group of the household head increases, along with work experiences and income.

Jalisan (2005) conducted a study on poverty status differentiation of the families in Negros Oriental based on selected socioeconomic variables. The study focused in differentiating the poor families from the non-poor families in Negros Oriental based on the result of the Family Income and Expenditure Survey (FIES) and the Labor Force Survey (LFS) in 2003.

Findings revealed that the six socioeconomic variables utilized in the various analyses are good predictors of poverty especially if the comparison involves only the poor and non-poor families. Age and years of schooling of the household head are directly related to poverty status, that is, as age and level of education increase, family income also increases. On the other hand, family size and percentage of income are inversely related to poverty status; the bigger the family size and the percentage of income the more that they are prone to poverty. This is in line with the analysis of Reyes (2005) that even if there is an improvement in the poverty situation in the Philippines, the rapid increase of the population hampered its poverty reduction process.

Krongkaew (2002) analyzed the socioeconomic characteristics of more than 1,300 extremely poor households randomly selected from rural areas in four regions of Thailand in 1999. It was found that "ultra poor" households are observed to share the same demographic and socioeconomic characteristics as the ordinary poor households in Thailand, such as relatively large family sizes, large demographic dependency ratios, household heads with low or no schooling, and lack of land assets. The difference is that the ultra poor have a higher incidence of widows as heads of households, fewer numbers of working days, and greater burden of chronically ill and disabled person in the family. Despite the Thai government's large number of social assistance schemes, very few of the ultra poor report receive any assistance.

A case study on Philippine poverty reduction strategy and poverty monitoring was conducted by Reyes and Valencia (2005). Their study examined the poverty situation in the Philippines and assessed the country's poverty reduction strategy and policy. It also analyzed the current state of poverty monitoring covering national and community levels. Findings show that based on the different poverty indicators, the country has been generally successful in improving the quality of life of its population. There have been improvements in the different dimensions. However, regional disparities are still large and for some indicators have even widened. Moreover, the population seems to be vulnerable to shocks and recent shocks have reversed some of the positive trends. They added that the increase in the number of poor families has been attributed to the high population growth rate.

It was also found that the gap between urban and rural areas has been increasing, while poverty incidence in the urban areas has declined by 14% over a 15-year period. Rural poverty incidence decreased by only 4%. Consequently, the incidence of rural poverty is now more than twice the urban poverty. In terms of the population who are poor, poverty incidence based on individuals is larger than the poverty

incidence using families as the unit since poor families tend to have larger family sizes. The average family size of poor family is 6.0 while it is 4.7 for non-poor.

In terms of education, significant improvements have been visible in the status of the population. However, many of the children who enroll do not complete the school year as evidenced by the low cohort survival rate. Only 67 out of every 100 students who enrolled in grade one are able to graduate from elementary. Similarly, in the secondary level, cohort survival rate is low at 73 percent. Now, considering their education from the elementary level, for every 100 children who enter grade one, only 67 will graduate. If all of these children then proceed to high school, only 49 will graduate from high school.

Considering health, Infant Mortality Rate (IMR) was reduced; maternal mortality rate (MMR) however, remains high. The nutritional status of the population has improved but despite the improvement, 3 out of every 5 children are still underweight based on international standards. Access to basic facilities has been improving. Access to safe water and access to sanitation have continuously increased. In terms of housing, only 2% of the total families in the Philippines live in makeshift housing.

Balisacan (1994) examines a number of commonly held views about the links between poverty and income distribution and economic growth in light of welfare measurement theory and practice, available data, and lessons from recent development experience. He shows that contrary to popular perceptions, recent episodes of growth in the Philippines have been beneficial to the poor, concluding that the main reason for the country's high poverty is primarily the short duration of growth and the slowness of this growth.

Characterization of the other dimensions of poverty in addition to those revealed by income-based measures in both international and intra-national contexts was done by Monsod in 1998. The author highlights the need to include outcome-based measures of poverty to income (means) measures for a far more complete picture of human deprivation or progress, since a one-to-one correspondence between incomes and outcomes is hardly the rule. Likewise, Fujisaki (cited by Constantino, 1999) revisits a major theme in development economics concerning the importance of investment complementarity and linkages in economic development. He contends that the poor performance of the Philippine economy in achieving sustained growth and poverty reduction has stemmed largely from the government's failure to put in place a policy environment conducive to broad-based investment patterns and economic growth.

Fabella (1999) reviewed and analyzed the issues associated with the impact of globalization on poverty and income inequality. One insight provided is that globalization rooted on comparative advantage should reduce overall income inequality and favor labor in less developed countries including the Philippines, and should offer a vehicle for less developed countries to whittle down the economic gap between them and the developed countries. In the same way, Canlas (1994) examines the behavior of labor's share in national income in the course of economic growth and a business cycle. Using data in 1980s and 1990s, he finds that the mean income share is constant but deviations from the mean are observed in the course of the business cycle. He also shows that the labor market in the Philippines is flexible: wages, employment, and hours of work all respond to changes in business conditions.

Tan (cited by Constantino, 1999) focuses on education poverty which is

taken to be the failure to complete Grade 6 of elementary schooling and for those who reached Grade 6, failure to achieve cognitive levels for this level. She finds that the incidence of education poverty not only is quite high but also varies greatly across regions of the country. Her analysis reveals a strong influence of mean family income, school inputs, and poverty incidence on student performance.

Balisacan (1997) in his study on Getting the Story Right: Growth, Redistribution, and Poverty Alleviation in the Philippines, found that the level of absolute poverty in the Philippines is much lower than what the official figures show. The alternative estimates are generally comparable to those reported for other countries at similar level of economic development and are based on a consistent procedure of constructing poverty lines.

Methodology

This paper used Discriminant Analysis (DA) to examine the differences between poor and non-poor characteristics on the basis of the attributes of the 30 variables identified. The variables were categorized as follows: demography, economic activities, environmental sanitation, literacy and education, social welfare, food shortage, food threshold and poverty level.

The research locale includes the 46 barangays of Malaybalay City. From the data taken from the 2009-2010 Malaybalay Integrated Survey System (MISS), 29,088 households (HHs) coming from the 46 barangays data are available. These HHs were arranged based from their respective income per capita ranging from highest to lowest. We then considered the upper 25th percentile (7,264 HHs) and the lower 25th percentile (7,264 HHs) as non-poor and poor HHs, respectively, a total of 14,528 HHs.

Results and Discussion

In order to determine the differential characteristics of poor and non-poor families at the household level in Malaybalay City, the data taken from the Malaybalay Integrated Survey System (MISS) 2009-2010 were arranged based on their income per capita. The upper 25th percentile with 7,264 households were considered as non-poor, while the lower 25th percentile, also with 7,264 households were considered poor.

A Discriminant Analysis was conducted to classify households whether poor or non-poor. Predictor variables included three on demography (location, number of HH members, and number of IP members), six economic (number of farmers in the HH, source of income, number of labor force employed, primary work of members, HH income, and income per HH), 10 environmental and sanitation (waste collection, burning practices, composting practices, recycling practices, segregation practices, hole with cover practices, hole without cover practices, type of toilet use, water system for drinking, and water system for domestic use), four literacy and education (number of 10 year old who are illiterate, number of graduates in tertiary level, number of 18 year olds with voc-tech), and finally seven social welfare (ownership of house and lot, number of HH without health insurance, number of unemployed without occupational skills, number of pairs of clothing, food shortage, below food threshold and below poverty).

The 30 variables used in the study were analyzed according to the categorization as follows: demography, economic activities, environmental sanitation, literacy and education, social welfare, food shortage, food threshold and poverty level. Using the Discriminant Analysis (DA), we

Table 1
Group Statistics Table

Poor or Non-Poor		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
Poor	Location	.172	.377	7264	7264
	No. of HH members	5.651	2.296	7264	7264
	No. of IP members	2.493	3.057	7264	7264
	No. of Farmers in the HH	.526	.7385	7264	7264
	Source of Income	2.437	1.514	7264	7264
	No. of Labor Force Employed	1.529	.993	7264	7264
	Primary Work of Members	1.874	1.067	7264	7264
	HH Income	28,530.320	16,416.986	7264	7264
	Income Per Capita	5,079.102	2,012.482	7264	7264
	Waste Collection	.122	.327	7264	7264
	Burning Practices	.836	.371	7264	7264
	Composting Practices	.045	.207	7264	7264
	Recycling Practices	.059	.236	7264	7264
	Segregation Practices	.009	.096	7264	7264
	Hole With Cover Practices	.009	.096	7264	7264
	Hole Without Cover	.115	.319	7264	7264
	Type of Toilet	3.037	1.691	7264	7264
	Water System for Drinking	.122	.32743	7264	7264
	Water System for Domestic Use	1.905	1.050	7264	7264
	No. of 10 yr-old who are Illiterate	.1557	.54064	7264	7264
	No. of Graduate of Tertiary	.0822	.36317	7264	7264
	No. of 18 yr-old with Vocational and Technical Skills	.9141	1.09235	7264	7264
	Out of School Youth	1.9583	2.68986	7264	7264
	Ownership of House and Lot	2.1267	.97649	7264	7264
	No. of Members in the HH without Health Insurance	1.9583	2.68986	7264	7264
	No. of Unemployed without Occupational Skills	.083	.352	7264	7264
	No. of Pairs of Clothing	2.507	.763	7264	7264
	Food Stortage	.049	.215	7264	7264
	Below Food Threshold	.049	.215	7264	7264
	Below Poverty	.049	.218	7264	7264
Non-Poor	Location	.630	.483	7264	7264
	No. of HH members	4.317	1.951	7264	7264
	No. of IP members	.940	1.820	7264	7264
	No. of Farmers in the HH	.190	.459	7264	7264
	Source of Income	2.947	1.370	7264	7264
	No. of Labor Force Employed	1.829	1.03861	7264	7264
	Primary Work of Members	3.224	1.27873	7264	7264
	HH Income	484,675.392	3.891E6	7264	7264
	Income Per HH	128,134.777	1.44682E6	7264	7264
	Waste Collection	.614	.487	7264	7264
	Burning Practices	.418	.493	7264	7264
	Composting Practices	.064	.245	7264	7264

	Recycling Practices	.125	.331	7264	7264
	Segregation Practices	.029	.166	7264	7264
	Hole With Cover Practices	.029	.166	7264	7264
	Hole Without Cover	.076	.265	7264	7264
	Type of Toilet	1.346	.893	7264	7264
	Water System for Drinking	.614	.487	7264	7264
	Water System for Domestic Use	1.224	.668	7264	7264
	No. of 10 yr-old who are Illiterate	.021	.170	7264	7264
	No. of Graduate of Tertiary	1.314	1.239	7264	7264
	No. of 18 yr-old with Vocational and Technical Skills	.193	.459	7264	7264
	Out of School Youth	.657	1.303	7264	7264
	Ownership of House and Lot	1.696	.932	7264	7264
	No. of Members in the HH without Health Insurance	.657	1.303	7264	7264
	No. of Unemployed without Occupational Skills	.104	.500	7264	7264
	No. of Pairs of Clothing	2.946	.375	7264	7264
	Food Stortage	.0184	.136	7264	7264
	Below Food Threshold	.018	.134	7264	7264
	Below Poverty	.018	.134	7264	7264
Total	Location	.401	.490	14528	14528
	No. of HH members	4.984	2.232	14528	14528
	No. of IP members	1.717	2.633	14528	14528
	No. of Farmers in the HH	.358	.637	14528	14528
	Source of Income	2.692	1.466	14528	14528
	No. of Labor Force Employed	1.679	1.027	14528	14528
	Primary Work of Members	2.549	1.357	14528	14528
	HH Income	256,587.156	2.76027E6	14528	14528
	Income Per HH	66,602.704	1.02484E6	14528	14528
	Waste Collection	.368	.482	14528	14528
	Burning Practices	.627	.484	14528	14528
	Composting Practices	.0544	.227	14528	14528
	Recycling Practices	.0921	.289	14528	14528
	Segregation Practices	.0189	.136	14528	14528
	Hole With Cover Practices	.0189	.136	14528	14528
	Hole Without Cover	.095	.294	14528	14528
	Type of Toilet	2.192	1.595	14528	14528
	Water System for Drinking	.368	.482	14528	14528
	Water System for Domestic Use	1.565	.944	14528	14528
	No. of 10 yr-old who are Illiterate	.089	.406	14528	14528
	No. of Graduate of Tertiary	.698	1.101	14528	14528
	No. of 18 yr-old with Vocational and Technical	.554	.911	14528	14528
	Out of School Youth	1.307	2.212	14528	14528
	Ownership of House and Lot	1.912	.978	14528	14528
	No. of Members in the HH without Health Insurance	1.307	2.211	14528	14528
	No. of Unemployed without Occupational Skills	.093	.432	14528	14528

No. of Pairs of Clothing	2.727	.640	14528	14528
Food Shortage	.034	.180	14528	14528
Below Food Threshold	.033	.180	14528	14528
Below Poverty	.033	.180	14528	14528

predicted a group (poor=0 and non-poor=1) membership of the variables. We examined first whether there are any significant differences between groups on each of the variables using group means and ANOVA results data.

Significant mean differences were observed for all the predictor variables. Table 1 shows the group statistics of the variables. It can be observed that there are variables that suggest good discriminators as the separation is large in their mean differences. In particular, on demography, the variable on *the number of IP members in the HHs* shows a large separation. It can be noted that IPs are considered as one of the most vulnerable sectors in our society. On economic activities, the variables on *HH income per year, income per capita*, while on environmental sanitation, *the type of toilet used*. On literacy and education, the variables *number of graduates in tertiary level* and *the number of out-of-school-youth (3 to 17 years old)* and in the four variables for social welfare, only the *number of members in the HH without health insurance* is considered.

From Appendix 3, it provides strong statistical evidence of significant differences between means of poor and non-poor HHs for all the variables with the *number of graduates in tertiary level* and *type of toilet* producing very high value F's. While Appendix 4 provides information of the discriminate functions produced. The canonical correlation of 0.763 suggests the model explains 58.22% of the variation in the grouping variable, i.e., whether a respondent is poor or non-poor. Wilk's Lambda in Appendix 5 indicates the significance of the discriminant function. The table indicates a highly significant function and provides the proportion of total variability not explained, so we have 41.8% unexplained.

Appendix 6 provides an index of importance of the predictors through the correlations of each variable and with each discriminate function. The sign indicates the direction of the relationship. Notice that the variables *number of graduates in tertiary level in the HH* (classified under literacy and education) *and type of toilet* (classified under environmental sanitation) show the strongest predictors of the group. Generally, 0.30 is seen as the cut-off between important and less important variables. With this, the following variables are also considered as predictors, namely *waste collection, water system for drinking, burning practices and water system for domestic use* (classified under environmental sanitation), *primary work of HH members* (classified under economic activities), *geographical location* (classified under demography), *number of 18-year olds in the HH with vocational and technical skills* (classified under literacy and education), and *number of pairs of clothing* (classified under social welfare). Thus, literacy and education, environmental sanitation, economic activities, demography and social welfare discriminate between non-poor and poor HHs. The rest of the variables are less successful as predictors.

The canonical discriminant function coefficient table (Appendix 7) creates the discriminant function given as

Table 2
Functions at Group Centroids Table

Group	Function
	1
Poor	-1.179
Non-Poor	1.179

D = (0.282 x *geographical location*) – (0.249 x *number of HH members*) – (0.029 x *number of IP members in the HH*) – (0.092 x number *of farmers in the HH*) – (0.092 x *source of income*) + (0.366 x *number of labor force employed*) + (0.233 x *primary work of HH members*) + (0.349 x *waste collection*) – (0.103 x *burning practices*) + (0.200 x *composting practices*) – (0.028 x *recycling practices*) + (0.571 x *segregation practices*) + (0.086 x *hole without cover*) – (0.214 x *type of toilet*) – (0.128 x *water system for domestic use*) – (0.070 x *number of 10-year olds who are illiterate*) + (0.393 x *number of graduates of tertiary level*) – (0.055 x *number of 18-year olds with vocational and technical skills*) – (0.037 x *number of out-of-school-youth in the HH*) – (0.137 x *ownership of house and lot*) + (0.075 x *number of unemployed in the HH without occupational skills*) + (0.265 x number of pairs of clothing) + (0.408 x *food shortage*) – (0.525 x *below food threshold*) + 0.172

Table 2 displays the group means (or the centroid) of the predictor variables. Cases with scores near a centroid are predicted as belonging to that group. Poor have a mean of -1.179, while non-poor have a mean of 1.179.

The classification results (as shown in Table 3) reveal that 87.9% of respondents were classified correctly into poor or non-poor groups. Poor group were classified with slightly better accuracy (89.4%) than non-poor group (86.4%).

We looked into the recipients of the poverty alleviation program of the city. There were 1,442 HHs beneficiaries in 2010. The poverty alleviation program data were on agriculture and social welfare. It was noted that only 367 HHs or 32.14% of the poor HHs were recipients of the program. The implication of this finding is that some of the beneficiaries identified and eventually the recipient of the LGU's poverty alleviation program are not within the poor class group. In the case of the agriculture and social welfare sectors, however, the program met the needs of the beneficiaries. As stressed by Alagenio (2011), government's programs including local counterparts, are too "politicized".

Conclusions and Recommendations

The classification results reveal 87.9% of households were classified correctly into poor and non-poor groups. It further revealed that literacy and education and environmental sanitation showed the strongest predictors of the group. The knowledge of these predictors should serve as basis to align poverty alleviation projects/programs of the government that will have impact especially to poor households.

Table 3
Classification Results Table

Classification Results[b,c]					
			Predicted Group Membership		
		Group	Poor	Non-Poor	Total
Original	Count	Poor	6495	769	7264
		Non-Poor	988	6276	7264
	%	Non-Poor	89.4	10.6	100.0
		Poor	13.6	86.4	100.0
Cross-validated[a]	Count	Poor	6491	773	7264
		Non-Poor	991	6273	7264
	%	Poor	89.4	10.6	100.0
		Non-Poor	13.6	86.4	100.0

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 87.9% of original grouped cases correctly classified.

c. 87.9% of cross-validated grouped cases correctly classified.

Examination of the existing poverty reduction program of the city revealed that only 32.14% of the identified poor were recipients of the poverty reduction program while 67.86% of the recipients were actually non-poor. The classification rule developed by this study, however, differ with the classification rule used by the city in the identification of beneficiaries. Planning, management, supervision and monitoring of local government anti-poverty programs should be done appropriately by the local officials and concerned institutions. There is therefore a need to establish selection criteria in the identification of beneficiaries in the future if the intention of the program is for the poor class of the society.

The analysis of this paper is certainly not of sufficient complexity to allow a comprehensive poverty reduction strategy for Malaybalay City to be devised entirely from this result. Nevertheless, it does provide policy planners with objective measures on the distribution of goods and services for poverty alleviation that might be realized from sectoral poverty reduction strategy. Policy planners should view this result as a guide to allocate resources for poverty reduction in a more informed evidence-based manner.

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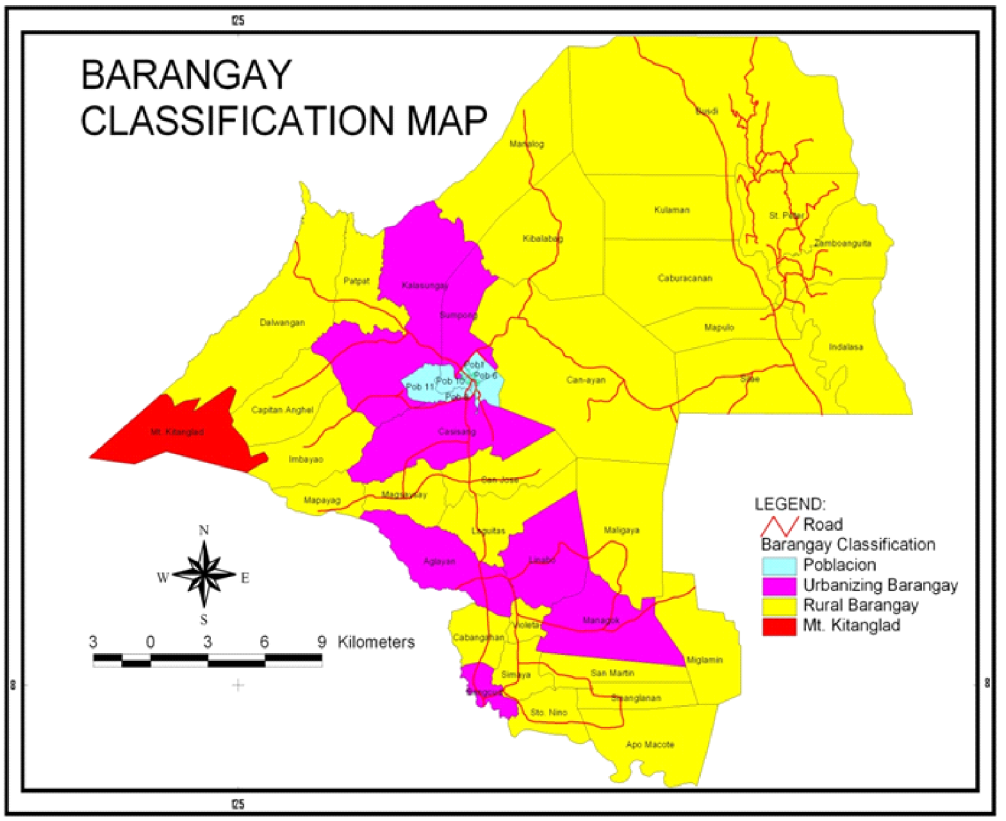
Appendix I. Identified Variables

Variable
Location
No. of HH members
No. of IP members
No. of Farmers in the HH
Source of Income
No. of Labor Force Employed
Primary Work of Members
HH Income
Income Per HH
Waste Collection
Burning Practices
Composting Practices
Recycling Practices
Segregation Practices
Hole With Cover Practices
Hole Without Cover
Type of Toilet
Water System for Drinking
Water System for Domestic Use
No. of 10 yr old who are Illiterate
No. of Graduates in Tertiary Level
No. of 18 yr-old with Vocational and Technical
OSY
Ownership of House and Lot
No. of Members in the HH without Health Insurance
No. of Unemployed without Occupational Skills
No. of Pairs of Clothing
Food Shortage
Below Food Threshold
Below Poverty

Appendix 2. Map of Malaybalay City



Appendix 3. Tests of Equality of Group Means Table

	Wilks' Lambda	F	df1	df2	Sig.
Location	.782	4048.479	1	14525	.000
No. of HH members	.911	1423.329	1	14525	.000
No. of IP members	.913	1383.420	1	14525	.000
No. of Farmers in the HH	.930	1090.036	1	14525	.000
Source of Income	.970	453.551	1	14525	.000
No. of Labor Force Employed	.979	316.290	1	14525	.000
Primary Work of Members	.753	4776.941	1	14525	.000
HH Income	.993	99.854	1	14525	.000
Income Per HH	.996	52.547	1	14525	.000
Waste Collection	.740	5110.347	1	14525	.000
Burning Practices	.813	3334.922	1	14525	.000
Composting Practices	.998	26.301	1	14525	.000
Recycling Practices	.987	188.992	1	14525	.000
Segregation Practices	.995	71.978	1	14525	.000
Hole With Cover Practices	.995	71.978	1	14525	.000
Hole Without Cover	.996	62.750	1	14525	.000
Type of Toilet	.719	5682.780	1	14525	.000
Water System for Drinking	.740	5110.347	1	14525	.000
Water System for Domestic Use	.870	2174.137	1	14525	.000
No. of 10 yr old who are Illiterate	.973	408.900	1	14525	.000
No. of Graduates in Tertiary Level	.687	6603.764	1	14525	.000
No. of 18 yr-old with Vocational and Technical	.844	2687.006	1	14525	.000
OSY	.913	1377.889	1	14525	.000
Ownership of House and Lot	.952	738.247	1	14525	.000
No. of Members in the HH without Health Insurance	.913	1377.889	1	14525	.000
No. of Unemployed without Occupational Skills	.999	8.746	1	14525	.003
No. of Pairs of Clothing	.882	1933.964	1	14525	.000
Food Shortage	.993	102.573	1	14525	.000
Below Food Threshold	.993	102.984	1	14525	.000
Below Poverty	.993	102.984	1	14525	.000

Appendix 4. Eigenvalues Table

EIGENVALUES				
Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	1.390[a]	100.0	100.0	.763

a. First 1 canonical discriminant functions were used in the analysis.

Appendix 5. Wilk's Lambda Table

Wilk's Lambda				
Test of Function(s)	Wilks' Lambda	Chi-square	Df	Sig.
1	.418	12644.838	26	.000

Appendix 6. Structure Matrix Table

	Function 1
No. of Graduates in Tertiary Level	.572
Type of Toilet	-.531
Waste Collection	.503
Water System for Drinking[a]	.503
Primary Work of Members	.486
Geographic Location	.448
Burning Practices	-.406
No. of 18-year olds with Vocational and Technical Skills	-.365
Water System for Domestic Use	-.328
No. of Pairs of Clothing	.309
No. of HH members	-.266
No. of IP members in the HH	-.262
Out-of-School-Youth	-.261
No. of Members in the HH without Health Insurance[a]	-.261
No. of Farmers in the HH	-.232
Ownership of House and Lot	-.191
Source of Income	.150
No. of 10-year olds who are Illiterate	-.142
No. of Labor Force Employed	.125
Recycling Practices	.097
Below Food Threshold	-.071
Below Poverty[a]	-.071
Food Shortage	-.071
Annual HH Income	.070
Hole With Cover Practices[a]	.060
Segregation Practices	.060

Appendix 7. Canonical Discriminant Function Coefficients Table

	Function
	1
Geographical Location	.282
No. of HH members	-.249
No. of IP members	-.029
No. of Farmers in the HH	-.092
Source of Income	-.092
No. of Labor Force Employed in the HH	.366
Primary Work of Members	.233
HH Income per year	.000
Income Per capita	.000
Waste Collection	.349
Burning Practices	-.103
Composting Practices	.200
Recycling Practices	-.028
Segregation Practices	.571
Hole Without Cover	.086
Type of Toilet	-.214
Water System for Domestic Use	-.128
No. of 10-year old who are Illiterate	-.070
No. of Graduates in Tertiary Level	.393
No. Of 18-yr olds with Vocational and Technical Skills	-.055
Out-of-School-Youth	-.037
Ownership of House and Lot	-.137
No. of Unemployed without Occupational Skills	.075
No. of Pairs of Clothing	.265
Food Shortage	.408
Below Food Threshold	-.525
(Constant)	.172