

Factors influencing for entering the physical science stream through the first attempt of the G.C.E (A/ L) examination

R.D.P.M. Rajamuni¹ and R.A.B. Abeygunawardana²

¹Ku/Dutugemunu M.M.V., Pothuhera

²Department of Statistics, University of Colombo, Colombo 3

Abstract

This paper attempts to identify factors affecting the entrance to the physical science stream of University of Colombo through their first attempt of the G.C.E. (A/L). To our knowledge, this may be the first study in this regard and data was collected through a questionnaire. Since the logistic transformation has a direct interpretation of the odds of a success, the logistic regression method was used to analyze the collected data. It was revealed that attending tuition class for mathematics in G.C.E (O/L), results of grade 5 scholarship examination, type of mother's occupation are affecting factors. Furthermore there is a combined effect from attending tuition classes for mathematics in G.C.E (O/L) examination & mother's occupation.

1. Introduction

The G.C.E (A/L) is the most competitive examination since it is the basis on which the students are selected to Sri Lankan Universities. Among all the government universities in Sri Lanka the faculty of science of the University of Colombo get the top students based on their A/L Z-scores. Many factors may be affecting the students in their endeavor of gaining successful result at G.C.E (A/L) [1-2]. One of the main objectives of this study was to identify the factors affecting a student for entering the physical science stream at faculty of science of University of Colombo in their first attempt of G.C.E (A/L).

2. Methodology

A questionnaire is intended to cover many influencing factors affecting students to obtain good result at G.C.E (A/L). The target population contains all the first year physical science students in the University of Colombo in 2009. A total of 259 students were selected for the enumeration. The collected data were analyzed by using graphical and numerical methods. Univariate Analysis was carried out to test the association between the

response (first attempt / not first attempt) and the rest of variables. It was difficult to draw conclusions based on only univariate analysis, because it is unadjusted for other variables. Therefore Logistic Model Fitting Approach was used to find out the important factors after adjusting for other variables.

Factors considered for the study:

The following main factors (areas) were considered in this study.

- Student's personal details, background and socio-economical status of the family
- Skills on grade 5 scholarship examination and G.C.E (O/L)
- Attending tuition classes for mathematics and science subjects in G.C.E (O/L)
- Attending to tuition classes for subjects in G.C.E (A/L)
- Extra activities and disturbances during the G.C.E (A/L)

3. Results

Initially the twelve explanatory variables were selected based on the preliminary analysis. Among these variables eight were found to be the significant from the Chi-Square test. Whenever the conditions of Chi Square test was violated the less powerful Fishers Exact test was applied instead. Both of these tests were evaluated at 20% level of significance. In the original data set, it was found that most cell combinations have zero frequencies. Therefore in order to avoid the problems raised due to zero cells, a small value (0.05) was added to frequency of each cell combination and then the Logistic Regression Model was fitted. The alternative models were compared relatively to the current model selected in each step. In order to test the adequacy of the selected model, diagnostic tests were carried out. From the fitted Logistic Regression Model, it was found that; O/L Mathematics tuition, Pass the grade 5 scholarship examination and type of mother's occupation are the affecting factors for the response. Other than these main factors it was found that there is a combined affect to the response form O/L Mathematics tuition & type of mother's occupation.

Table 1: Odds Ratio estimates and 95% Confidence Intervals

Factor	Effect	Odds Ratio Estimate (Point Estimate)	95% Odds Ratio Confidence Interval		H0: $\psi = 1$
			Lower	Upper	
O/L maths Tuition	Attending O/L mathematics tuition Vs not attending	0.414	0.201	0.856	Reject H ₀
Grade 5 Exam	Pass the year 5 scholarship examination Vs not pass	1.920	0.998	3.696	Do Not Reject H ₀
Mother's Occupation Type	Government job Vs self employment or other	0.634	0.233	1.723	Do Not Reject H ₀
	Semi government job Vs self employment or other	0.790	0.280	2.231	Do Not Reject H ₀
	Private job Vs self employment or other	0.117	0.012	1.108	Do Not Reject H ₀

The goodness of link test evident that the logistic links function is satisfactory and any outlier was not detected in the data set. So, it can be concluded that the final fitted model is adequate. According to Table 1, it is evident that only one level is not significantly different with the zero level while other levels are significantly different at 5% level of significance.

4. Discussion

Result of the grade 5 scholarship examination has a higher possibility to be selected to the university in the first attempt at G.C.E (A/L). Occupation type of the mother is also a factor effecting for the students to being selected for the Science faculty in his/her first attempt at the G. C.E (A/L). When considering a student who attends tuition classes for O/L mathematics he/she has 0.414 times more chance of being selected to physical science stream at the University of Colombo in the first attempt at G.C.E (A/L). Other than those factors there is a combined effect of factors of attended tuition for mathematics & occupation type of the mother.

References

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Determinants of Poverty in Sri Lanka

M.D.D.D. Deepawansa, M.R. Sooriyarachchi, W.N. Wickremasinghe

Department of Statistics, University of Colombo

Abstract

Combating poverty is a problem in Sri Lanka as the pockets of severe deprivations are widely acknowledged. In this research, the prime objective was to find determinants of poverty. For this purpose, 2002 Household Income and Expenditure survey (HIES) data of fifteen poorest Divisional Secretariat (DS) divisions are used. Binary logistic modeling was used to find the determinants of poverty and to quantify effects. Principal Component Analysis and Factor Analysis were used for visualization of multidimensional data. The logistic regression model results show that, the household size, highest education level, total household income, number of income receivers and age of the household head are influential factors to being poor. Factor analysis and principal component analysis, resulted in the variables extracted into clearly defined and interpretable four factors (economic, household factors, household head characteristics and number of income receivers) to identify the status of poverty