Storytelling with CBMS Data

Examining the Role of Education as a Poverty Trap

Justin Gabrielle A. Manay
De La Salle University – Manila
Manila, Philippines
justin_manay@dlsu.edu.ph

Catherine Jade E. Pajarito
De La Salle University – Manila
Manila, Philippines
catherine_pajarito@dlsu.edu.ph

ABSTRACT

Poverty remains a prevalent issue in the Philippines today, and there are a multitude of factors which can affect it. The aim of this research is to look into how the educational attainment of the household head affects a household's poverty status using Pasay City data from 2014 CBMS surveys and Python. Three key points will be considered in the exploratory analysis, namely: the relationship between the educational attainment of the household head and poverty, how the former affects his/her children's educational outcomes, and how it can also affect his/her job status. We also use statistical analysis to confirm our earlier findings for the first two. From the analysis, we can conclude that the educational attainment of the household head is strongly related to a household's poverty status, and that this is due in part to the household head's educational attainment affecting his/her own children's educational outcomes and to the household head not being able to secure better employment.

KEYWORDS

poverty, education, exploratory data analysis, chi-squared test of independence, logistic regression

ACM Reference format:

Justin Manay and Jade Pajarito. 2019. Storytelling with CBMS Data: Examining the Role of Education as a Poverty Trap. In *Proceedings of Philippine Computing Science Congress (PCSC2019). City of Manila, Philippines.*

1. Introduction

From 2005 to 2010, the Philippines went from 5th poorest to 3rd poorest country from Southeast Asia, as estimated by Asian Development Bank in its August 2014 report "Poverty in Asia: A Deeper Look" [6]

Table 4: Annual Per Capita Poverty Thresholds, Poverty Incidence, and Magnitude of Poor Families: 2000, 2003, and 2006

	Annual Per Capita Poverty Threshold (pesos)			Poverty Incidence Among Families (%)			Magnitude of Poor Families (estimates)		
Region	2000	2003	2006	2000	2003	2006	2000	2003	2006
PHILIPPINES	11,458	12,309	15,057	27.5	24.4	26.9	4,146,663	4,022,695	4,677,305
NCR	15,722	16,737	20,566	5.8	4.8	7.1	127,655	110,864	167,316
Region I	12,687	13,281	15,956	29.5	24.4	26.2	237,910	213,846	248,443
Region II	11,128	11,417	13,791	25.3	19.3	20.5	143,421	113,298	126,726
Region III	13,760	14,378	17,298	17.3	13.4	16.8	268,558	242,820	320,109
Region IV-A	13,670	14,720	17,761	15.2	14.5	16.7	272,484	316,911	374,952
Region IV-B	12,013	12,402	14,800	36.4	39.9	43.7	162,668	199,485	238,489

Figure 1.1. Comparison of Poverty Incidence in the Philippines in years 2000, 2003, and 2006 [1]

The annual per capita poverty threshold went up from ₱11,458 in year 2000, and ₱15,057 in year 2006. Despite this, the estimates number of poor families went from 4 million to 4.67 million in years 2003-2006 and poverty levels have remained at around 26% all throughout, as stated in Figure 1.1 [1]

Self-rated poverty in the Philippines, however, has been much higher, hovering at around 50-52% as of 2008, meaning that even more people feel as though they are poor. [1] Thus, poverty remains a prevalent issue in the Philippines today. This is especially so in NCR.

Table 9: Provinces with the Largest Numbers of Poor People

Province	Magnitude ('000)	Share (%)	Poverty Incidence (%)	Income Class[a]
Negros Occidental	190.4	4.1	33.4	First
Cebu	184.2	3.9	23.5	First
NCR	167.3	3.6	7.1	First
Pangasinan	151.7	3.2	27.6	First
Leyte	147.9	3.2	40.5	First

[a] Provinces are classified annually based on average annual income over the previous 3 calendar years.
NCR = National Capital Region.
Source: Panadero (2009).

Figure 1.2. Provinces with the largest numbers of poor people [1]

In 2009, the magnitude of the poor families has been 167,300 families specifically for NCR, making it the third poorest province in terms of magnitude. [1]

Because of these figures, poverty remains an issue that deserves to be studied, especially in NCR. Poverty is multidimensional, however, and a lot of factors can affect a household's poverty status. For this study, we choose to focus on only one particular factor: education (or the lack thereof).

2. Educational Attainment as a Determinant of Poverty

Investment in education is considered as the main source of accumulation of social capital. Education provides ones with the means of learning about proper family planning and management. [5]

In line with this, Homecillo (2014) found that a higher educational attainment is strongly correlated with a lower likelihood of living in poverty. Finishing college results in having greater access to better job opportunities and higher paying jobs compared to those with fewer years of education. Among poor families in NCR, 96.3% of household heads were high school graduates and below, which explains why a majority of them work on jobs which are temporary, low-paying and reserved for unskilled workers. [4]

Table 2. Poverty incidence by education of most educated member (2009)

	Education level of most educated member			
Region	HS undergrad and below	HS grad	College undergrad	College grad
NCR	8.9	5.6	1.3	0.1
CAR	28.1	24.8	16.1	3.9
Region 1	27.1	26.5	12.3	2.2
Region 2	24.5	18.6	6.7	1.6
Region 3	24.6	16.0	6.2	1.2
Calabarzon	24.4	14.8	3.9	0.8
Mimaropa	44.0	31.0	10.7	2.9
Region 5	53.7	41.6	24.1	3.8
Region 6	41.8	42.8	11.1	2.5
Region 7	51.8	32.1	15.6	4.3
Region 8	50.0	38.2	16.9	4.2
Region 9	58.3	37.2	18.4	3.8
Region 10	54.2	40.9	22.4	4.6
Region 11	46.5	25.7	9.2	1.6
Region 12	46.7	29.0	15.7	4.1
ARMM	46.8	39.1	31.2	13.1
Caraga	57.2	49.0	29.4	9.7
Philippines	41.7	23.8	10.7	2.4

SOURCE: FIES 2009, LFS JANUARY 2010

Figure 2.1. Poverty incidence by education of most educated member in 2009 [3]

The study also profiles the poverty incidence per region based on the highest educational attainment of a household's most educated member, as shown in Figure 2.1. The figure reveals that households where the most educated member dropped out early tend to be associated with higher poverty incidence. Those whose most educated member finished only up to undergraduate high school and high school have a huge difference in terms of poverty incidence, compared to those who at least went through college and those who graduated college. [3] The figure also shows that the differences were more evident in all regions. For NCR, the poverty incidence is lower in general as there are more job offerings, so that those who are only high school undergraduates and graduates can still earn a decent living. Despite this, a large difference in the poverty incidence still exists even for NCR, and educational attainment remains a strong determinant of a household's likelihood of becoming poor.

3. Analysis

3.1 Data

We use the 2014 Pasay City CBMS dataset for this research, particularly the household and member-level datasets. We would like to check the relationship between the educational attainment of the household head and the household's poverty status using the latest data available; thus, we ended up choosing this dataset. Both household and member-level datasets are used since some variables that are relevant to our study, like educational attainment, sex and age, among others, are member-level.

3.2 Methodology

We use Python in conducting all the steps outlined here. We first clean the dataset, removing observations for which the variables *totin* (total income) and *reln* (relationship) do not make sense.

After cleaning the data, we employ exploratory data analysis in an attempt not only to visualize the relationship between the two variables of interest, but also to find out how one variable affects the other. As such, we divide our exploratory data analysis into three phases.

In the first phase, we simply compare the educational attainment of the household head to different poverty measures/correlates in an attempt to see if there is a strong relationship between the two. Afterwards, for the next two phases, we start to try to build a story by exploring how the educational attainment of the household head can affect a household's poverty status.

For the second phase, we try to determine how the educational attainment of the household head affect his/her children's and grandchildren's educational outcomes. Meanwhile, for the third phase, we try to determine how the head's educational attainment affects his/her job outcomes. Both these phases are important because they emphasize the role of education as a poverty trap and as such, it helps paint a better picture of how households with less educated household heads not only become poor but how they remain poor as well.

After thoroughly examining the data at hand, we proceed to the statistical analysis, where we conduct the relevant tests to determine whether our findings in the exploratory data analysis hold statistically. For this part, we employ the chi-square test of independence and logistic regression.

3.3 Results and Discussion

3.3.1 Data Cleaning

For this study, two variables in particular need to be cleaned: (1) *totin*, or total annual income and (2) *reln* or the relationship of each member to the household head.

For *totin*, we drop all the observations for which *totin* = 0. For *reln*, we drop all the households which have more than one household head (i.e., the household has more than one member for which *reln* = 1). We can try to impute values for these variables. However, since there are 257 observations for which *totin* = 0 and there are 191 households with more than 1 household head, compared to the 59,566 observations in total, we can safely drop the observations in question.

3.3.2 Exploratory Data Analysis

Since our objective is to determine how the educational attainment of the household head influences a household's poverty status, we intend to examine the following key points:

(1) relationship between educational attainment of the household head and poverty measures/correlates
(2) how the educational attainment of the household head can affect his/her children's and grandchildren's educational outcomes
(3) how the educational attainment of the household head can affect his/her employment outcomes

Since both our variables of interest are categorical in nature, we will mainly be comparing between groups As such, bar graphs will primarily be employed throughout this part.

1. ***How is the educational attainment of the household head related to particular poverty measures/correlates?***

First, we want to know how the educational attainment of the household head is related to particular poverty measures (e.g., income per capita, family size, dependency ratio, etc.)

From Figure 3.1, those whose household heads finished within grade school earn the least on average, while those whose heads finished within high school are not too far behind. Meanwhile, those whose household heads finish within college earn around ₱60,000 more, compared to them. This reinforces the notion that education provides one with skills which can then be used to find higher-earning jobs.

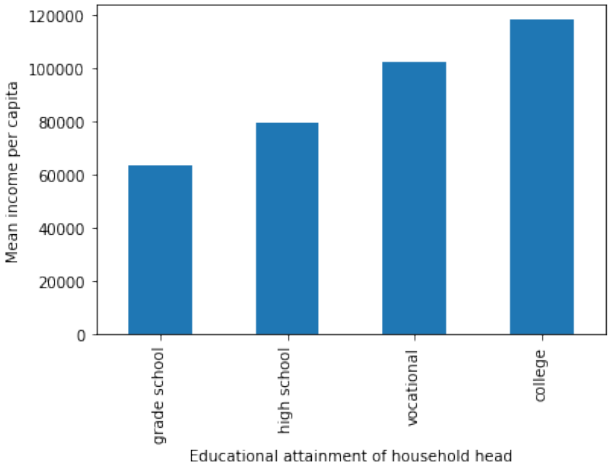

Figure 3.1. Mean income per capita

We can also examine the proportion of poor households per educational attainment group. We define "poor" based on the total income per capita per household. Based on the 2015 poverty threshold for Pasay City, a poor household is one whose total income per capita is less than ₱25,007. We use the 2015 poverty threshold as these are computed every three years, and the closest one for 2014 was the one computed for 2015.

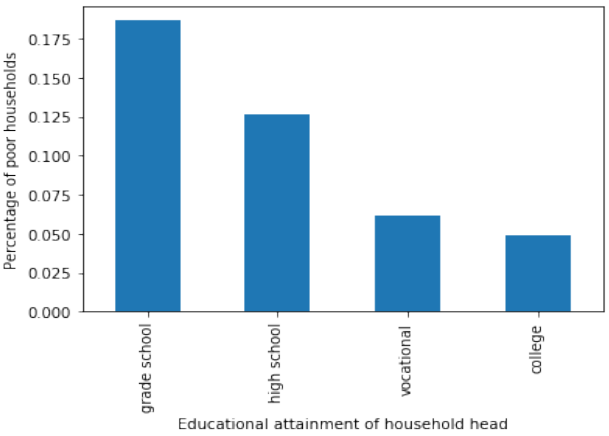

Figure 3.2. Percentage of poor households

From Figure 3.2, around 18% of households where the household head finished within grade school now experience poverty, while those who the household head finished high school are not far behind.

In summary, households where the household head finished within grade school tend to have lower income. As a result, poverty rates for these households are higher.

2. ***How does the educational attainment of the household head affect his/her children's educational outcomes?***

In order to explain our findings in point 1, we need to delve into how the household head's educational attainment can eventually result in poverty. One way by which the household head's educational attainment can influence a household's poverty status is by affecting his/her children and grandchildren's educational outcomes. It may be that the household head's own outlook on education is "inherited" by the children/grandchildren, so that they too are convinced to pursue college or to drop out early. It could also be that household heads who drop out early cannot get decently-earning jobs, so they enlist the help of their children, so that they end up dropping out early too.

Note that the children/grandchildren are marked in the data as when *reln* = 3, 4 or 5 (i.e., if the household member is a son/daughter, son/daughter-in-law or grandchild of the household head). However, since we are concerned with the household head's children/grandchildren who are of schooling age, we limit our observations to children/grandchildren who are between the ages of 6 and 20, inclusive.

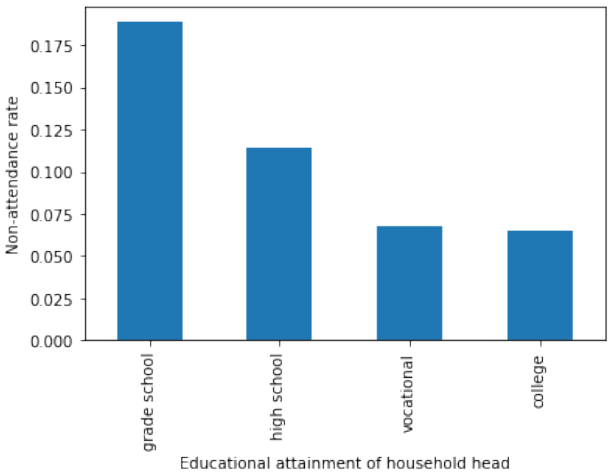

Figure 3.3. Mean non-attendance rate

We begin by examining the mean non-attendance rate per educational attainment group. As expected, from Figure 3.3, households where the heads only finished up to grade school are associated with the greatest rates of non-attendance in school. To paint a better picture, we can look at the level at which most of these children stop schooling.

We see from Figure 3.4 in the next page that most of the children of schooling age who end up dropping out finish high school at least, regardless of educational attainment, after which they drop out of schooling altogether.

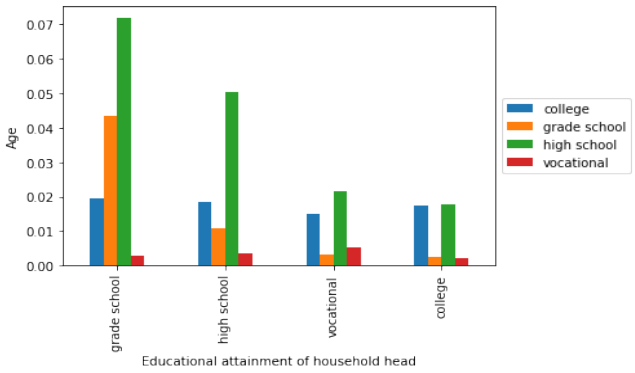

Figure 3.4. Educational attainment of non-attending children

Figure 3.5 shows that for all four educational attainment groups, the mean age of non-attending children is at around 17 years old, which coincides with the age at which most children begin college. This supports Figure 3.4, which suggests that most non-attending children stop after high school, regardless of the educational attainment of the household head.

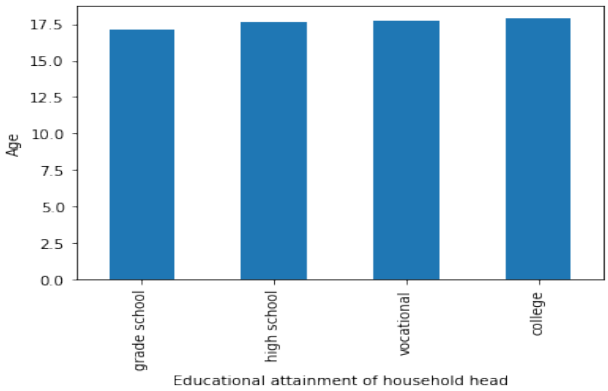

Figure 3.5 Mean age of non-attending children

Children probably dropout after high school in order to to help support the family. The dropouts may also be associated with teenage pregnancies among some of the households.

We can check our first claim by computing the proportion of school-age children who have a job per educational attainment group. From Figure 3.6, we see that households where the household head stopped earlier are associated with higher rates of employment among school-age children.

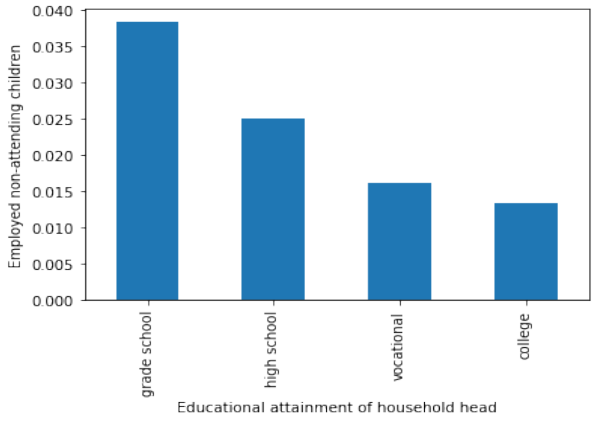

Figure 3.6. Percentage of employed non-attending children

We cannot check the second claim directly, as there is no variable that indicates the frequency of teenage pregnancies per household. However, the variable *uniparind* allows us to check how many single parent families there are per household.

Figure 3.7 shows that households where the household head had only finished within high school are associated with a higher average incidence of single parents — be it that the household head is himself/herself a single parent or one of the children gave birth to a child at a relatively young age. Again, this goes in line with the claim that education helps instill proper family planning/management. Moreover, household heads who pursue higher education are likely to postpone family planning and as such, they probably could be expected to make more mature decisions regarding such.

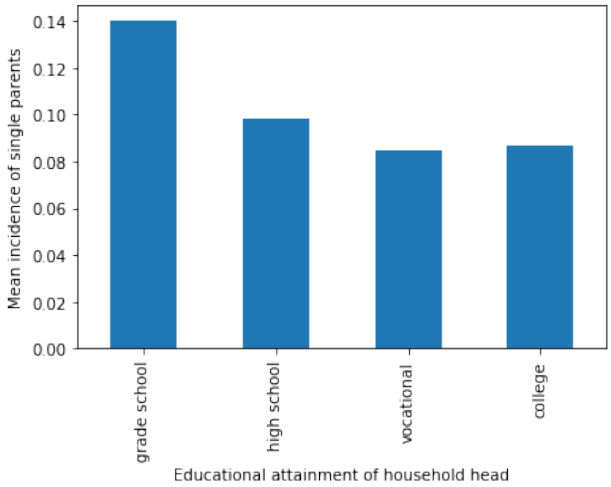

Figure 3.7. Mean incidence of single parents

Lastly, we can consider the variable *ynotsch*, which details why the child did not consider going to school.

From Figure 3.8 (shown in the Appendix), looking for employment and being too young were primary reasons across all educational attainment groups. This was especially so for households where the household head stopped studying earlier.

Most notably, for households where the household head finished up to grade school or high school, the high cost of education and a lack of interest on the part of the children were reasons not commonly found among the other two groups.

In summary, households where the household head stopped school early are associated with higher non-attendance rates. Most of the dropouts happen to be around 17 years old, regardless of educational attainment. This suggests that many of the non-attending children stop at high school.

We posited that this may be the case because: (1) they start looking for work or (2) they begin families at a young age.

Using exploratory data analysis, we found out that this may very well be the case, especially for households where the household head stopped school early.

Finally, by looking at the reasons why the children stopped attending school, we note that in general, many of the dropouts seek employment after high school. Moreover, there are some marked differences between the responses of those where the household head dropped out early and of those where they stayed up to vocational school/college.

3. ***What jobs are associated with household heads with a certain educational attainment?***

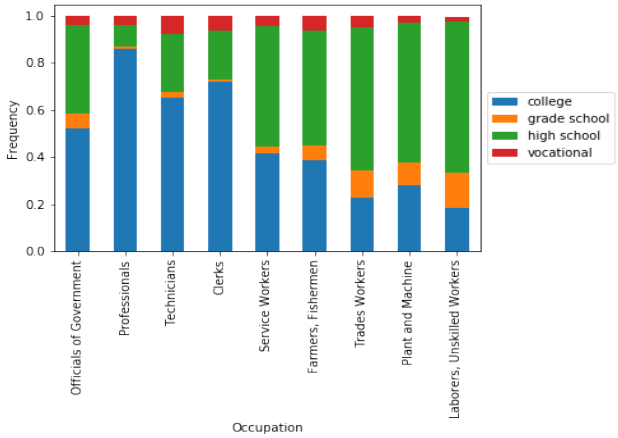

Figure 3.9. Primary occupation group

Another way by which the household head's educational attainment can influence a household's poverty status is by affecting his/her own employment outcomes. Education is supposed to help one hone skills for gainful employment. Thus, we assume that households with less educated household heads must have less profitable jobs, making them more vulnerable to poverty.

From Figure 3.9, we find that most household heads who finished within grade school and high school take on mostly unskilled jobs, whereas household heads who finished within college take on mostly professional jobs, again reinforcing the fact that education helps develop skills to take on higher-paying jobs.

We also plot the educational attainment of the household head against the nature of employment. Figure 3.10 tells us that most of the employed household heads who finished within grade school seem to move from job to job. Meanwhile, most of the employed household heads who finished within high school at least have short-term employment, while most of the employed household heads who are college graduates have permanent employment.

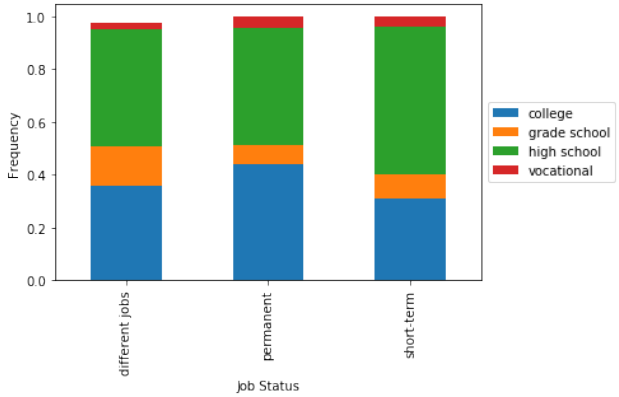

Figure 3.10. Nature of employment

In summary, we find that less educated household heads are associated with unskilled jobs and are more likely to flit from job to job. On the other hand, those who chose to pursue higher education have more permanent and high-paying jobs. This does not come as a surprise to us, but it is a factor which helps explain why households with heads who dropped out of school earlier are more likely to be poor on average.

From the exploratory data analysis, we find out that the educational attainment of the household head not only influences his/her own employment outcomes, but it also can affect the educational outcomes of his/her own children and grandchildren, as well as their future employment prospects. Thus, education can be viewed as a poverty trap, as households where the household head dropped out earlier doom their children to the same fate.

3.3.3 Statistical Analysis

1. ***How is the educational attainment of the household head related to particular poverty measures/correlates?***

To determine whether the educational attainment of a household head is independent of the household's poverty status or not, we use the chi-squared test of independence. The chi-squared test of independence is used to relate two categorical variables, and determines whether or not both variables are independent or not independent.

For this particular chi-squared test, we consider the following hypotheses:

Ho: The educational attainment of a household head is independent of a household's poverty status.

Ha: The educational attainment of a household head is not independent of a household's poverty status.

We first build the contingency table associated with the variables to get an idea of their relationship with each other.

educal2	poor	non-poor
college	1152	22479
grade school	1010	4400
high school	3508	24246
vocational	131	1988

Figure 3.11. Contingency table

We choose $\alpha = 0.05$. We can calculate the chi-squared test statistic using the package scipy.stats, which, upon computation, is equal to $\chi^2 = 1408.31$.

For a chi-squared test of independence (or for any test involving the chi-squared distribution for that matter), we reject the null hypothesis if the chi-squared test statistic is greater than the critical value, and we do not reject it if the test statistic is less than the critical value.Upon computation using scipy.stats, we find that the critical value is equal to 7.81.

From the decision rule we laid out earlier, since $1408.31 > 7.81$, we reject Ho. Thus, at α=5%, we can conclude that educational attainment of a household head is not independent of a household's poverty status.

This test only determines independence and not the direction of relationship. For this, we would have to inspect trends in the data.

From Figure 3.2 and Figure 3.11, we see that a lower educational attainment is associated with higher poverty incidence. Thus, we can conclude that households where the household head stopped attending school earlier are more likely to experience poverty.

2. *How does the educational attainment of the household head affect his/her children's educational outcomes?*

To determine whether the educational attainment of a household head affects his/her children's educational outcomes, we focus on how the household head's educational attainment affects non-attendance rates among his/her children. From Figures 3.4 and 3.5, we can see that many school-aged children finish only up to high school and drop out at around the age of 17. From this, we can use the variable *educind* to tells us whether or not a child within the ages of 17 to 20 has proceeded to continue after high school or not and see how the number of children who proceed to continue after high school is affected by the educational attainment of the household head. Again, since we are dealing with two categorical variables here, we use the chi-squared test of independence.

We consider the following hypotheses:

Ho: The educational attainment of a household head is independent of whether a child's continues schooling after high school.

Ha: The educational attainment of a household head is not independent of whether a child's continues schooling after high school.

We also build the contingency table associated with the variables in question, as with before.

educal2	continued	did not continue
college	2759	827
grade school	482	563
high school	3016	1963
vocational	227	81

Figure 3.12. Contingency table

We choose $\alpha = 0.05$. We can calculate the chi-squared test statistic using the package scipy.stats, which, upon computation, is equal to $\chi^2 = 443.03$.

For a chi-squared test of independence (or for any test involving the chi-squared distribution for that matter), we reject the null hypothesis if the chi-squared test statistic is greater than the critical value, and we do not reject it if the test statistic is less than the critical value.Upon computation using scipy.stats, we find that the critical value is equal to 7.81.

From the decision rule we laid out earlier, since 443.03 > 7.81, we reject Ho. Thus, at α=5%, we can conclude that educational attainment of a household head is not independent of whether a child's continues schooling after high school.

For this purpose, we can also employ logistic regression to determine how the educational attainment of the household head affects the probability of his/her child of going past high school into vocational courses or college.

We construct the dummy variable *female* to indicate whether or not the respondent is female and the dummy variable *female_hh* to indicate whether or not the household head is female. We also construct the dummies *highschool*, *vocational* and *college* to indicate the level of education of the respondent's household head.

For the dependent variable, we simply use the variable *educind* from earlier. As with the earlier analysis, we only consider children within the ages of 17-20.

Using the package statsmodel.api, we obtain the following results:

```
Optimization terminated successfully.
         Current function value: 0.618425
         Iterations 5
                          Results: Logit
================================================================
Model:              Logit            No. Iterations:   5.0000
Dependent Variable: educind          Pseudo R-squared: 0.042
Date:               2019-01-07 23:48 AIC:              12306.5732
No. Observations:   9937             BIC:              12364.2054
Df Model:           7                Log-Likelihood:   -6145.3
Df Residuals:       9929             LL-Null:          -6411.8
Converged:          1.0000           Scale:            1.0000
----------------------------------------------------------------
               Coef.   Std.Err.     z     P>|z|    [0.025   0.975]
----------------------------------------------------------------
depratio      -0.5450    0.1262  -4.3188  0.0000  -0.7923  -0.2977
female_hh     -0.2945    0.0503  -5.8528  0.0000  -0.3931  -0.1959
female         0.1822    0.0430   4.2385  0.0000   0.0979   0.2664
age_yr_y      -0.0000    0.0012  -0.0203  0.9838  -0.0024   0.0024
highschool     0.5513    0.0592   9.3204  0.0000   0.4354   0.6673
vocational     0.5471    0.1333   4.1046  0.0000   0.2858   0.8083
college        0.7490    0.0496  15.1049  0.0000   0.6518   0.8462
ispoor        -0.1518    0.0567  -2.6762  0.0074  -0.2630  -0.0406
================================================================
```

Figure 3.13. Results of logistic regresson

From the results in Figure 3.13, the dependency ratio, the family being poor and the household head being female have negative coefficients. This means that these factors negatively affect the probability that the child proceeds to vocational courses/college after high school.

On the other hand, the household head finishing up to or within high school, vocational school or college and being female have positive coefficients, meaning that these encourage children to go past high school.

The coefficients for *highschool*, *vocational* and *college* are to be interpreted relative to the baseline, which is the household head finishing up to or within grade school. Thus, the household heads finishing up to or within high school, vocational school or college are more likely to have children who will proceed past high school. Meanwhile, households where the household heads finished grade school are less likely to do so. Furthermore, the coefficient for *college* is significantly larger compared to those for *highschool* and *vocational*, meaning that the household head finishing college is a significant determinant of a child proceeding past high school.

The same is true for the variables *female* and *female_hh*. Thus, females are more likely to proceed after high school compared to males. Moreover, children with female household heads are less likely to proceed after high school.

Moreover, all variables except *age_yr_y* (age of household head) are signficant since their p-values are less than the level of significance we have chosen, which is 0.05.

Do note that the model could be improved upon. However, the results are all in line with what had been observed in the exploratory data analysis part.

4. Conclusion

From section 2, an increase in the educational attainment of the household head has been found to be an important factor in reducing the likelihood that a household is poor. [5] Throughout section 3, we were able to emphasize this.

From point 1 in part 3 on the analysis, we determined that households where the household heads stopped attending school earlier are poorer on average. We explore why this is the case in points 2 and 3. In point 2, we explore how the household head's educational attainment can affect his/her children's or grandchildren's educational outcomes. We found out that on average, households where the head stopped attending school earlier tend to be associated with higher non-attendance rates. We also posited that most of the students stop after high school, and that in some cases, it may be due to a child opting to help support his/her family or a child getting pregnant early into her teens. Upon delving into their reasons, we find that among households where the head stopped attending school earlier, the children felt like the cost of education was too high or that they did not find interest in their studies anymore.

We also explore how the educational attainment of the household head affects his/her job outcomes. Again, household heads who stopped attending school earlier tend to have unskilled jobs and they also tend to move from job to job. Meanwhile, household heads who had at least reached college were predominant in managerial and professional jobs, and primarily had permanent employment.

To test our observations in the exploratory data analysis part, we employed chi-squared test of independence and logistic regression. We conclude that the educational attainment of the household head is related to a household's poverty status, and that this is due in part to the household head's educational attainment affecting a child's probability of going past high school.

All in all, while college is not a guarantee to a good life, as the graphs suggest, it at least makes it more likely for one to achieve better job outcomes, and for one's children/grandchildren to achieve better educational outcomes. Moreover, we emphasized in part 2 that poorer households tend to forgo education, so that when they start their own households, those too are more likely to become poor. Thus, poverty can influence lower educational outcomes, but as we emphasized in part 3, lower educational outcomes also influence one's job outcomes, thus reinforcing poverty. This paints a picture of poverty being a vicious cycle, with education (or lack thereof) being one of the main contributors. The role of education in this poverty trap deserves to be emphasized and studied more using government datasets like the CBMS.

We would like to recommend that barangays start using the educational attainment of household heads as a screening variable to determine targets for their government programs. We also recommend that they institute family planning, sex education and career counselling programs for households where the household head dropped early.

ACKNOWLEDGMENTS

We thank the Pasay City Planning and Development Office and Community-Based Monitoring System for providing us with the data. We likewise thank Duke delos Santos and Courtney Ngo for their guidance in this endeavor.

REFERENCES

[1] Asian Development Bank. (2009). Poverty in the Philippines: Causes, Constraints, and Opportunities

[2] CBMS. (2009). The Many Faces of Poverty in Pasay City. Retrieved from https://www.pasay.gov.ph/Pdf/socio-eco/ TheManyFacesofPovertyinPasayCity.pdf

[3] Ducanes, G. and Tan, E. (Jul 6 2014). Education, location, poverty. Philippine Daily Inquirer. Retrieved from https://opinion.inquirer.net/76312/education-location-poverty

[4] Homecillo, L.(n.d.). Profile of the poor in NCR: An Analysis. Retrieved from http://nap.psa.gov.ph/ncs/12thncs/papers/INVITED/IPS-17%20Housing%20and%20Urban%20Poor%20Statistics/IPS-17_3%20Profile%20of%20the%20Poor%20in%20NCR%20An%20Analysis.pdf

[5] Majeed, M. and Malik, M. (2014). Determinants of Household Poverty: Empirical Evidence from Pakistan. MPRA Paper No. 57744. Retrieved from https://mpra.ub.uni-muenchen.de /57744/2/MPRA_paper_57744.pdf

[6] Mangahas, M. (2014). Third poorest country in Southeast Asia?. Philippine Daily Inquirer. Retrieved from https://opinion.inquirer.net/78399/third-poorest-in-southeast-asia

[7] Philippine Statistics Authority. (2015). Philippines in Figures. p.36

APPENDIX

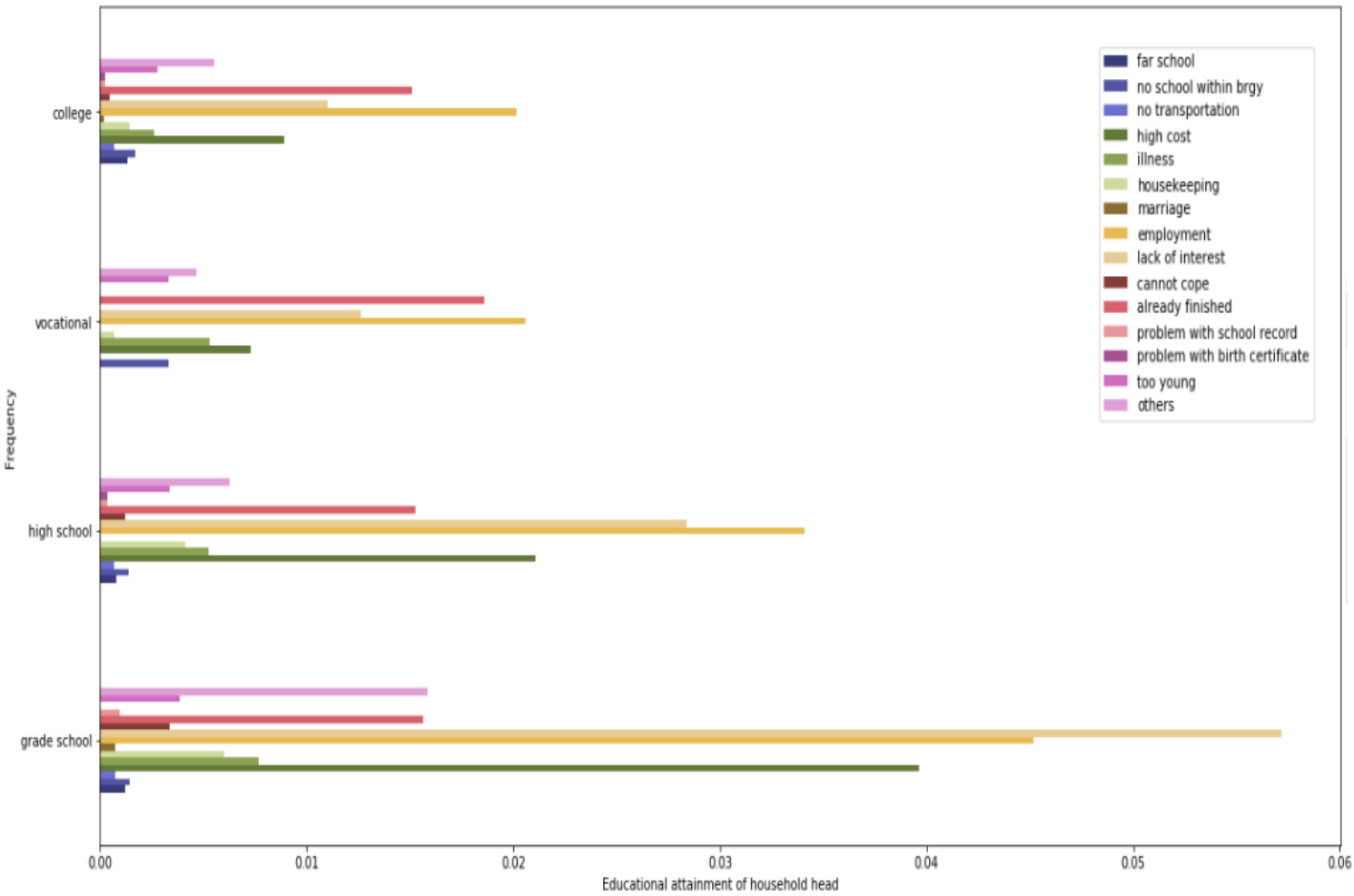

Figure 3.8. Reasons for not studying