Exploring the Disparities on the Actualization of the Ideal Number of Children among Filipino Women

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Family size has been consistently associated with poverty incidence as shown by household survey data over time. According to the 2010 Census of Population, the average household size stands at 4.6 members. With this current situation, this research delves deeper into this vital familial attribute by determining the factors that influence the levels of disparity between a woman's actual and ideal number of children. Furthermore, the research aims to understand how the odds of actualization of the Filipina's ideal number of children increases or decreases in relation to the factors that were considered in the study.

The regression model for multinomial response utilized in the study is the proportional-odds cumulative logistic regression model. The results of the study have shown that religious affiliation to the Roman Catholic church doubles the estimated odds of exceeding the ideal number of children among women. Meanwhile, the odds of exceeding the desired number of children decrease as financial status improves. Husband-related factors also affect the actualization of the ideal number of children. More importanly, the discrepancy on the woman and husband's ideal number of children, as well as the experience of emotional abuse from spouse both leads to an increase in the estimated odds of exceeding desired fertility. Lastly, a woman's use of contraceptives to delay or avoid pregnancy and whether the woman wanted her last pregnancy are also significant factors that affect the actualization of a woman's ideal number of children.

Keywords: fertility preference, contraceptive behavior, cumulative logit model, multiple response models

1. Introduction

The Philippines might have followed the rapid decline in the fertility path of East Asian nations such as Korea and Taiwan, but surveys revealed that this pace of decline was not maintained (Zablan, 2000). Moreover, the country's fertility level, compared to its Southeast Asian neighbors, shows that even if it is declining, it has remained quite high. According to the 2013 Philippine National Demographic Health Survey (NDHS), the total fertility rate (TFR) in the country is at 3.0 children per woman, which is higher than the mean number of ideal children, which is 2.8. The Philippine Statistics Authority (PSA) defines TFR as the average number of births a woman would have at the end of her reproductive years. The country's TFR lags behind Malaysia's TFR of 2.0 and Indonesia's TFR of 2.3 (World Bank, 2013). Thailand has the second lowest TFR in the Southeast Asian region registering at 1.4 while Singapore has long outpaced all its neighbors with 1.2 children per woman (World Bank, 2013).

In the Philippines, there is a firm belief that it is not healthy to grow up alone without siblings and a prevailing notion of children being a support for the family's financial security (Costello & Casterline, 2009). Furthermore, with the country's religious affiliation being largely Roman Catholic and Muslim, it has a ''prolife'' stance (Costello & Casterline, 2009). This is one of the possible reasons why the average household size stands at 4.6 persons according to the 2010 Census of Population.

Family size has been consistently associated with poverty incidence as shown by household survey data over time. This is because among the poorest twenty percent of the women, over half do not use any method of family planning whatsoever, while less than a third use modern methods (Family Planning Survey, 2006). A study by Orbeta in 2005 stated that the number of children ever born (CEB) is larger among poorer households whose demand for additional children is lower. Their poor contractive practice is the cause of large number of children in these poorer households rather than the higher demand for children (Orbeta, 2005). Moreover, poverty incidence was lower for families with fewer children, but rose consistently with the number of children. Aside from the link with poverty, the risks of illness and premature deaths for mother and child alike were known to increase when mothers, especially young mothers, had too many children that were spaced too closely (Cabral, 2014).

In line with this, the researchers aim to determine the possible factors that affect the actualization of the Filipino women's ideal number of children and describe how these factors affect the gap between the woman's total number of children ever born and their ideal number of children. Finally, we wish to understand how the odd of actualization of the Filipino women's ideal number of children increases or decreases in relation to the factors that affect it.

2. Review of Related Literature

Education has been shown to be a significant indicator of a population's level of fertility. Studies have shown that women's education and her husband's education have a negative effect on their desired number of children and mean fertility. For the case in India, the educated males are more amenable to the current changes in the status of their wife and are more receptive to their views and aspirations (Nag & Singhal, 2013). A study in Pakistan and Uganda have shown that the wealth factor and women empowerment have a negative effect on a woman's desired number of children along with contraceptive use and lower fertility (Khan & Bari, 2014; Kwagala et al., 2016).

Another study in Pakistan by Uddin, Bhuyan and Islam (2011) have concluded that wealth index, sex of household head and religion are strong predictors of the mean number of CEB and desired number of children. Male headed families have greater mean number of CEB but lower mean number of desired family size while religion plays a significant role in the mean number of CEB and desired family size. Muslims have a higher mean number of CEB and desired family size than non-Muslims. Furthermore, intimate partner violence (IPV) is an indicator of disempowerment of women and has severe reproductive health consequences. This variable expresses a lower level of power over household decision-making among women. Moreover, women who have knowledge of contraceptives and those who have used it have been shown to have increased chances of having more than two children (Hashmi & Zafar, 1997; Butt & Jamal, 1993). Finally, it has been observed that women do not want more children when they have one to two living children which is either a living son, one living son and one living daughter or two sons.

As for the case of the USA, age at first cohabitation continues to account for almost all the recent increases in nonmarital childbearing. Since 1990, there has been a 70% increase in the number of cohabiting households with children (Manning, 2001). In an article by *USA Today* on April 2013, the results of in-person interviews of 12,279 women aged 15-44 showed that 19% of the women gave birth within their first year of premarital cohabitation.

In the case of the Philippines, women living in urban areas have significantly lower children ever born however; it has no effect on both the demand for additional children (Orbeta, 2005). The same study stated that education significantly lowers children ever born (CEB) on women with college education compared to the women with no education. Interestingly, another result of the study by Orbeta (2005) revealed that women from poorer households do not demand more children compared to those from the richer households, contrary to general belief.

3. Methodology

The study made use of the data from the 2013 Philippine National Demographic and Health Survey. The survey covered a national sample of around 16,000

women aged 15 to 49 and roughly 15,000 households. The NDHS is designed to collect information regarding fertility, fertility preferences, knowledge in family planning, maternal and child health, and various demographic indicators.

The researchers considered the responses of 670 women, all of which are above 36 years of age. The data restriction on age was made since there is a decline in fecundity as age increases. The gradual decrease in fecundity usually starts at the age of 32 and rapidly decreases after the age of 37. This was made to ensure that the women included in the study were likely to have a lower fertility and probability of conception due to a decrease in egg quality (Spandorfer et al., 1998; Broekmans et al., 2006). Furthermore, the researchers limited the study to women who have answered the violence module of the survey because this section contains questions regarding spousal abuse, which is one of the factors being considered in this study.

3.1 Definition of variables

Table 1. The Dependent Variable and Explanatory Variables

Variable Name	Definition of Variables
childgap	Comparison between the number of total children ever born and ideal number of children; 0 – less than ideal, 1 – equal, 2 – greater than ideal
Agecohab	Woman's age a first cohabitation with partner
Catholic	Woman's religion; 0 – non-catholic, 1 - catholic
Educ	Woman's education (in number of years)
Emotionalabuse	Woman's experience of spousal emotional abuse; 0 – no, 1 – yes
Husbideal	Husband's deal number of children in relation to wife's ideal number of children; 0 – less, 1 – equal, 2 - more
Husbeduc	Husband's education (in number of years)
Malehead	Sex of the household head; 0 – female, 1 - male
Urban	Place of residence of the household; 0 – rural, 1 – urban
Wantedpreg	Desire for the child during the last pregnancy; 0 – wanted then, 1 – wanted later, 2 – wanted no more
Wealth	Wealth Index; 1 – poorest, 2 – poorer, 3 – middle, 4 – richer, 5 – richest

3.2 Cumulative logistic regression model for ordinal response

To account for the ordinality of the response variable, the cumulative probabilities of the response being less than or equal to *j* are initially formed by,

$$P(Y \leq j \mid x) = \pi_1(x) + \cdots + \pi_j(x), j = 1, \ldots, J.$$

The cumulative logit is then defined as,

$$\log it\left[P\left(Y \le j|x\right)\right] = \log \frac{\pi_1(x) + \cdots + \pi_j(x)}{\pi_{j+1}(x) + \cdots + \pi_j(x)}, j = 1,...,J-1.$$

Special case: Proportional-odds cumulative logit model

The proportional-odds cumulative logit model assumes that the way the explanatory variables are associated to being at a higher level compared to a lower level of the response category through the estimated coefficients is the same through all levels of the response. In other words, this model uses cumulative probabilities up to a threshold, thereby making the whole range of ordinal categories binary at that threshold (Agresti, 2007).

Proportional-odds assumption

Satisfying the proportional odds assumption indicates that the effect parameters are invariant to the response variable cut points. These effect parameters remain the same across all categories of the response variable. The odds ratios will remain the same except from slight deviations that can be attributed to sampling variability.

Tests for proportional odds assumption

Approximate likelihood ratio Test for proportionality of odds

The approximate likelihood ratio test for the proportionality of odds utilized by STATA computes for twice the difference of the maximized likelihood of the proportional-odds cumulative logit model with the maximized likelihood of the generalized ordinal logit model. This test statistic asymptotically follows a Chi-square distribution with degrees of freedom equal to the difference in the number of estimated parameters by the 2 models. The null hypothesis is that the estimated coefficients are proportional across levels of the response variable.

Score test for proportional odds

The score test for equality of slopes utilized by SAS has a null hypothesis that the proportional odds assumption is satisfied. The test is commonly used as a confirmatory test if it does not reject the null hypothesis because the score test tends to reject more than it should, especially if there is a small sample size or the cell frequencies/counts for each main effect does not reach 5. The test statistic is approximately Chi-square distributed with degrees of freedom equal to the difference in the number of parameters estimated by the generalized ordinal logit model and the proportional-odds cumulative logit model.

Brant test

The Brant test is used to determine whether the actual or observed deviations from the proportional-odds cumulative logit model can be attributed to random chance alone. STATA displays individual Brant tests for each explanatory variable in the model and assesses the overall proportionality of odds using a joint test.

Pearson residuals, deviance residuals, scaled deviance

Residual analysis is done to examine where specifically the differences are between the proposed models by means of comparing the observed values to the expected values after the model has been fit. The rationale of checking the residuals is to further understand the nature of dependence of the observed and estimated expected frequencies in the cells (Agresti, 2007).

The *Pearson residual* is quantified through this equation,

$$e_{ij} = \frac{n_{ij} - \hat{\mu}_{ij}}{\sqrt{v\left(\hat{\mu}_{ij}\right)}}$$

For i=1, 2,..., I and j=1, 2,..., J. The magnitude represents the degree of departure. Summing the squares of the residuals produces the Pearson goodness-of-fit statistic. Another approach of analyzing the residuals is through the *deviance residuals.* It is given by

$$\sqrt{d_i}\left[sign\left(y_i - \widehat{\mu_l}\right)\right] \text{ where } d_i = 2\omega_i\left[y_i\left(\widetilde{\theta_l} - \widehat{\theta_l}\right) - b\left(\widetilde{\theta_l}\right) + b\left(\widehat{\theta_l}\right)\right].$$

The deviance can be computed by summing the d_i's. $D\left(y;\hat{\mu}\right) = \sum_i d_i$

Also, through this, the *scaled deviance* is just the ratio of $D\left(y;\hat{\mu}\right)$ over φ. This has a limiting chi-square distribution with degrees of freedom n - p where n is the number of observation and p is the number of estimated parameters. A model with too large scaled deviance does not fit the data well.

4. Analysis

4.1 Descriptive statistics for the explanatory variables

The figure below represents the distribution of the type of place of residence of the sampled respondents based on the 2013 NDHS data.

The figure shows the proportions of respondents that reside in urban and rural areas. The process of selecting the respondents to satisfy the restrictions of the study resulted to unbalanced representation of the two major geographic areas. The fraction of the respondents residing in urban areas is only half of the proportion of the respondents in the rural areas. The comparisons related to the variable type of place of residence are then presented using percentages to account relativity in sizes.

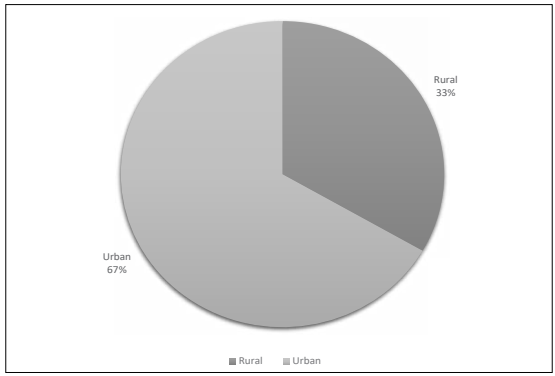

Figure 1. Distribution of Respondents Depending on the Type of Place of Residence

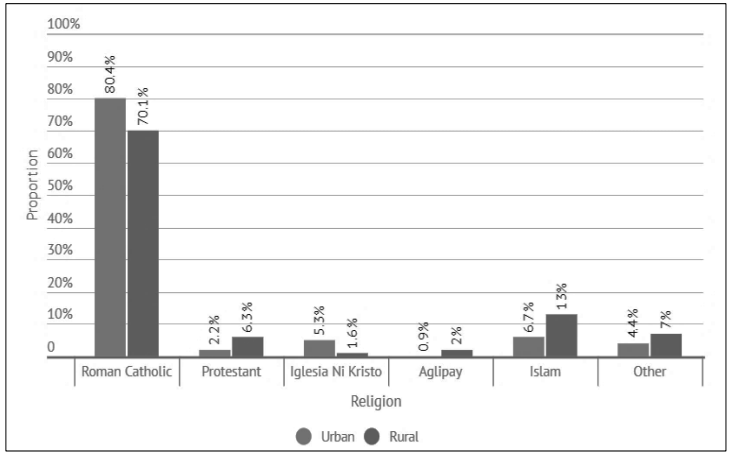

Figure 2. Classification of Religious Affiliations among Urban and Rural Areas

The dominance of the Roman Catholic is strongly evident in both type of geographic areas based on the clustered column chart. The urban areas are comprised of Catholics by around 80% of the sampled respondents and around 70% for the rural areas. This is then followed by the Abrahamic monotheistic religion, Islam, with 6.7% and 13% for the urban and rural areas, respectively. There is an apparent large gap in proportions between the dominating religion and the others. Albeit the Islam came the second largest, there are hardly any substantial differences between Islam and the other religions. However, it is important to note that this result was only based on the sample restricted to some respondents. Through this outcome, the study can focus more on the two

categories of religion, the dominating one, and the aggregate of religions. That is, the Roman Catholic and others.

Aside from religion, it is also of interest to examine the differences in the respondent's total children ever born and her ideal number of children in relation to wealth index classification. The table below presents important descriptions of the desired variables for each wealth index category.

Table 2. Relationship of Wealth to Total Children ever Born and Ideal Number of Children

Wealth Index	Summary Statistics	Total children ever born	Ideal number of children
Poorest	Mean	7	4
	Minimum	1	1
	Maximum	15	12
	Standard Deviation	3	2
Poorer	Mean	5	4
	Minimum	1	0
	Maximum	16	10
	Standard Deviation	2	2
Middle	Mean	5	3
	Minimum	1	1
	Maximum	10	10
	Standard Deviation	2	1
Richer	Mean	3	3
	Minimum	1	1
	Maximum	9	12
	Standard Deviation	2	1
Richest	Mean	3	3
	Minimum	1	1
	Maximum	9	6
	Standard Deviation	1	1

From Table 2, the highest mean for the total children ever born and the ideal number of children can be found in the poorest wealth index classification. However, the maximum of 16 for the total children ever born is in the poorer category. Nonetheless, the summary statistics of the first three categories do not differ much from each other. The maximums for the two highest categories are unusually high in both variables although the estimated averages are relatively lower compared to others. Furthermore, a test for nonparametric correlation between wealth index and total children ever born yielded to a significant negative

association *(p-value<0.0001)*. Similar result was produced for the association of wealth index and ideal number of children.

For the relationship of husband's desire for children and the sex of the household head, Table 3 is presented below for the summary of counts.

Table 3. Husband's Desire for Children and Sex of Household Head

Husband's desire for children	Sex of household head	
	Male	Female
Both want same	399	22
Husband wants more	190	12
Husband wants fewer	43	4
Don't know	0	0

The allocation of counts seems higher for all categories of husband's desire for children when the household head is male. However, there is no clear pattern on whether male headed households relate to husbands wanting more children or the opposite. Testing for possible correlation resulted to non-significance of the relationship between husband's desire for children and sex of household head at 5% level of significance (p-value=0.389).

Another point of interest is that whether the perception of the woman about her last pregnancy affects the gap between her total CEB and ideal number of children.

Table 4. Relationship of Level of Likeness of Last Pregnancy and Kid Count Gap

Wanted last child	Kid count gap		
	Less than ideal	Equal	Greater than ideal
Yes	117	118	220
No	14	28	173

From Table 4, there are relatively many cases of women who wanted their last pregnancy and yet, they exceeded their ideal number of children. Also, roughly 7% of the sampled respondents who did not want their last pregnancy were not able to attain their ideal number of children. The chi-square test concluded that there is a significant association *(p-value<0.0001)* between kid count gap and perception of woman about her last pregnancy.

Now, the discrepancies in the respondents' total children ever born and ideal number of children will be examined closely at Table 5.

Table 5. Differences Between Total Children Ever Born and Ideal Number of Children

Summary Statistics	Total children ever born	Ideal number of children
Mean	5	4
Minimum	1	0
Maximum	16	12
Standard Deviation	3	2

The differences in the summary statistics of the two variables do not deviate much from each other. However, their maximums are very different with a 4-unit gap. The figure below describes the distribution of each variable to further explore these using parallel boxplots.

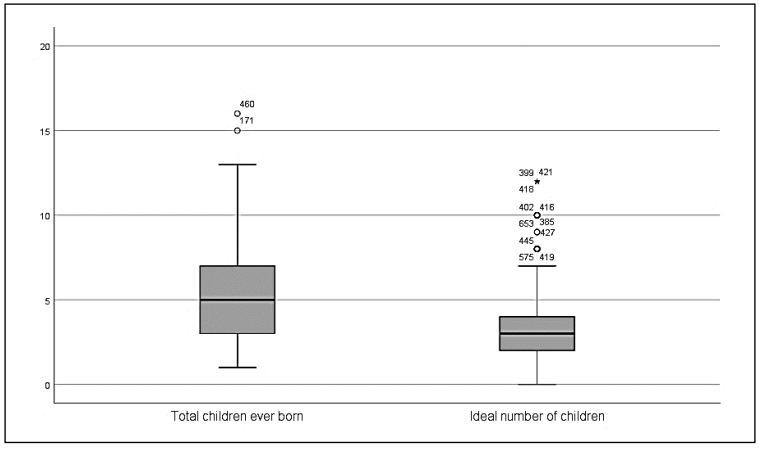

Figure 3. Parallel Boxplots of Total Children ever Born and Ideal Number of Children

Although the summary statistics from Table 5 seem alike, the parallel boxplots revealed that the distribution of total children ever born is more varied than the ideal number of children. There are two possible outliers for the former and 11 outliers for the latter. However, the two boxplots both seem symmetric.

4.2 Descriptive statistics for the response variable

Table 6 summarizes the counts of the three categories of the dependent variable in the study: the gap between the total children ever born and the ideal number of children. A child gap of '0' equates to the actual number of children being less than the ideal number of children, and thus those respondents with negative differences for the two mentioned variables. Else if the child gap is

categorized as '1', the total children ever born of the respondent is the same as her ideal number of children. Otherwise, if the child gap belongs to category '2', the difference between the actual and ideal is large or positive.

Table 6. Summary of Counts for the Dependent Variable

Child Gap	Count	Percentage
0	131	19.55
1	146	21.79
2	393	58.66

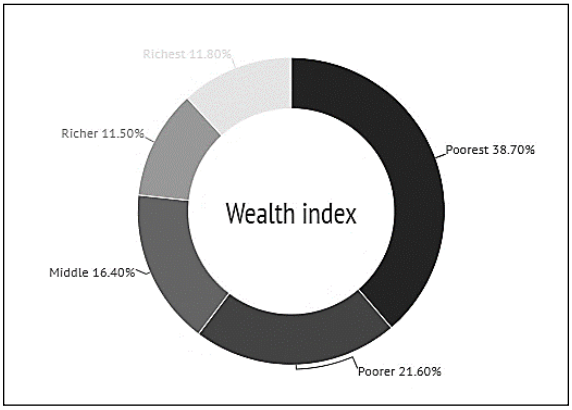

Figure 4. Wealth Index Category Distribution

The proportion of respondents with child gap categorized as '0' and '1' are relatively similar in size. There is a noticeable large count of respondents with child gap categorized as '2' which comprised of around 59% of the sampled respondents. As every category has sufficiently large count of respondents belonging to them, inferences regarding this can be considered as valid.

Examining the relationship of child gap with wealth index was thus performed using both parametric and non-parametric methods. The test concluded that there is a significant association between the difference in the actual versus ideal number of children and wealth index *(p-value<0.0001, Spearman's rho coefficient= -0.186)*. Consequently, the variables are negatively correlated. That is, if wealth index is increased, child gap is expected to decrease or fall below to another category.

Table 7. Means of Actual Fertility and Ideal Number of Children Depending on the Child Gap Category

Mean	Actual Fertility and Ideal Number of Children		
	Lower Actual Fertility / '0'	Equal Actual Fertility / '1'	Higher Actual Fertility / '2'
Total Children Ever Born	3.39	3.73	6.38
Ideal Number of Children	5.24	3.73	3.11

Finally, Table 7 presents the difference between the actual fertility and ideal number of children with regards to the child gap categories. The estimated averages of total children ever born belonging in the lower and equal actual fertilities are relatively similar in terms of magnitude while the estimated average for the same variable in the higher actual fertility is around 7 children. Meanwhile, an estimated average of around 5 for the ideal number of children is extracted from the group of respondents with lower actual fertility and around 3 to 4 children for the groups with equal and higher actual fertilities.

4.3 Proportional-odds cumulative logistic regression model

Table 8. Full Model for the Proportional-Odds Cumulative Logistic Regression

childgap	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Educ	-0.0043	0.0285	-0.1500	0.8810	-0.0602	0.0517
Husbeduc	-0.0410	0.0275	-1.4900	0.1350	-0.0949	0.0128
Wealth	-0.1235	0.0844	-1.4600	0.1430	-0.2890	0.0419
Wantedpreg	-1.5455	0.2131	-7.2500	0.0000	-1.9632	-1.1278
Husbideal	0.3465	0.1569	2.2100	0.0270	0.0389	0.6541
Delaypreg	0.5959	0.1973	3.0200	0.0030	0.2092	0.9826
Urban	-0.1707	0.1925	-0.8900	0.3750	-0.5481	0.2067
Agecohab	-0.1196	0.0165	-7.2700	0.0000	-0.1518	-0.0873
Malehead	-0.2333	0.3520	-0.6600	0.5070	-0.9232	0.4566
emotionalabuse	0.4756	0.2220	2.1400	0.0320	0.0405	0.9108
catholic	0.8592	0.1925	4.4600	0.0000	0.4819	1.2364
/cut1	-4.9578	0.6498			-6.2314	-3.6842
/cut2	-3.5636	0.6330			-4.8043	-2.3229

Stepwise procedure

A stepwise procedure was utilized to determine which explanatory variables in the full model are significant predictors of the actualization of ideal number of children at 0.05 level of significance.

The stepwise procedure showed that religion, age at first cohabitation, wealth index, husband's ideal number of children, whether a woman considered delaying

or avoiding pregnancy, wanted her last pregnancy, or suffered emotional abuse are all significant factors in determining the gap between actual fertility and ideal number of children among Filipino women. The results indicate that as the husband's ideal number of children reaches or exceeds the woman's ideal number of children, being a Catholic, and whether a woman experienced emotional abuse or have tried delaying or avoiding pregnancy, these factors are all associated with an increase in the odds that a woman is leaning towards the direction of exceeding rather than not attaining the ideal number of children. Meanwhile, as the woman's wealth index and age at first cohabitation increases, or when a woman's last pregnancy is wanted, the odds of leaning towards the direction of exceeding rather than not attaining the ideal number of children decreases.

Testing for proportional odds assumption

Tests for the proportional odds or parallel regression assumption were performed using an approximate likelihood-ratio test and a score test. In addition, the Brant test was also used to test for parallel regression assumption. The approximate likelihood ratio test and score test have p-values equal to 0.1377 and 0.0584 which indicates that there is no violation of the proportional odds assumption. However, the overall Brant Test has a p-value = 0.022 which provides evidence that the parallel regression assumption has been violated. This is indicative that a proportional-odds cumulative logit model is not viable, and a general multinomial logistic regression model must be estimated instead. Since there is no sufficient evidence to conclude that the effect estimates vary across levels of the response variable, a proportional-odds cumulative logistic regression model is viable and parsimonious.

To remedy the issue on the violation of the parallel regression assumption, the researchers estimated a cumulative logit model which includes all the explanatory variables that passed the Brant Test in the stepwise model estimation (thus omitting *agecohab* from the model), and tests for the proportional odds assumption were conducted. The results of the approximate likelihood ratio test, score test, and the Brant test with p-values equal to 0.3111, 0.2179, and 0.147, respectively showed that the cumulative logit model containing *catholic, wealth, wantedpreg, husbideal, delaypreg,* and *emotionalabuse* as explanatory variables satisfied the proportional odds assumption.

Table 9. Proportionality of Odds Ratio Test for the Proportional-Odds Cumulative Logistic Regression

Proportionality of Odds Test	Test Statistic	df	p-value
Approximate Likelihood Ratio Test	7.11	6	0.3111
Score Test	8.29	6	0.2179

Table 10. Brant Test for the Proportional-Odds Cumulative Logistic Regression

Brant Test			
Variable	**Test Statistic**	**df**	**p-value**
All	9.52	6	0.147
catholic	2.11	1	0.146
wealth	1.25	1	0.264
wantedpreg	0.04	1	0.848
husbideal	0.05	1	0.82
delaypreg	2.23	1	0.135
emotionalabuse	1.06	1	0.304

Testing for goodness of fit

The proportional-odds cumulative logit model containing *catholic, wealth, wantedpreg, husbideal, delaypreg,* and *emotionalabuse* as predictors of the gap between actual fertility and ideal number of children was also tested for its fit. The likelihood ratio test also indicates that the proposed cumulative logit model with covariates is better than the intercept only model.

The scaled deviances of the proportional-odds cumulative logit model using the deviance residuals and Pearson residuals are 1.0055 and 0.9614 respectively. These values are very close to 1, which is an indication that the model is of good model fit.

Table 11. Scaled Deviances of the Proportional-Odds Cumulative Logistic Regression

Criterion	**Value**	**df**	**Scaled Deviance**
Deviance Residuals	277.5303	276	1.0055
Pearson Residuals	265.3413	276	0.9614
AIC = 491.4971			
BIC = 527.5553			

5. Results and Discussion

5.1 Proportional-odds cumulative logistic model

The final model is a proportional-odds cumulative logit model with *catholic, wealth, wantedpreg, husbideal, delaypreg,* and *emotionalabuse* as predictors of the actualization of the ideal number of children among Filipino women. The results showed that an increase in the husband's ideal number of children, being a Catholic, whether a woman have tried to delay or avoid getting pregnant, and

whether a woman have experienced emotional abuse are all associated with an increase in the odds that a woman is leaning towards exceeding rather than not attaining the ideal number of children. Meanwhile, the odds of leaning towards exceeding rather than not attaining the ideal number of children decreases as financial stability improves or when a woman's last pregnancy is wanted.

Table 12. Final Model for the Proportional-Odds Cumulative Logistic Regression

childgap	Coef.	Std. Err.	Z	P>z	Odds Ratio	[95% Conf.	Interval]
Catholic	0.7883	0.1858	4.2400	0.0000	2.1995	0.4241	1.1524
Wealth	-0.3367	0.0583	-5.7700	0.0000	0.7141	-0.4510	-0.2224
Wantedpreg	-1.4302	0.2012	-7.1100	0.0000	0.2393	-1.8246	-1.0358
Husbideal	0.3899	0.1515	2.5700	0.0100	1.4768	0.0929	0.6868
Delaypreg	0.6775	0.1882	3.6000	0.0000	1.9689	0.3086	1.0464
emotionalabuse	0.5591	0.2138	2.6200	0.0090	1.7492	0.1402	0.9781
/cut1	-1.7897	0.3484				-2.4725	-1.1069
/cut2	-0.5266	0.3416				-1.1962	0.1429

Religion

Table 13. Average Marginal Effects of Religion on the Actualization of the Ideal Number of Children

Catholic	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	-0.1086874	.025353	-4.29	0.000
Actual fertility equals desired fertility	-0.0478007	.0117042	-4.08	0.000
Actual fertility exceeds desired fertility	0.1564881	.0353479	4.43	0.000

As seen on Table 12, using the exponentiated form of the estimated coefficient to get the estimated odds ratio, for every level of actualization of the ideal number of children, the estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children for Catholic women is about 2.20 times the estimated odds for Non-Catholic women, holding all other factors constant. More specifically, the estimated probability of not meeting the ideal number of children for Catholic women is 10.8 percentage points lower as compared to Non-Catholic women. In addition, the estimated probability of actualization of desired fertility for Catholic women is roughly 4.8 percentage points lower compared to Non-Catholic women. Lastly, the estimated probability of exceeding desired fertility for Catholic women are 15.6 percentage points higher compared to Non-Catholic women.

In line with the previous findings, while fixing the other variables in the model at their mean levels, the marginal predicted probability plot shows that the predicted probabilities of having actual number of children less than or equal to the ideal number of children slightly decrease if a woman is Catholic. This is indicative that being Catholic is more likely to be associated with exceeding the ideal number of children. This result is significant with various studies that have linked religion and fertility. As a predominantly Roman Catholic country, higher fertility can be expected due to the religion's doctrine of birth control prohibition and its pro-life stances. (Westoff & Jones 1979; Sherkat & Ellison 1999; Orbeta, 2005).

Wealth index

Table 14. Average Marginal Effects of Wealth Index on the Actualization of the Ideal Number of Children

Wealth	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	.0464248	.0077991	5.95	0.000
Actual fertility equals desired fertility	.0204177	.0039066	5.23	0.000
Actual fertility exceeds desired fertility	-.0668425	.010716	-6.24	0.000

The wealth index is a proxy variable for the household's economic status for this study. For every level of actualization of the ideal number of children, the estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children for women classified under the poor wealth index category is 0.71 times the estimated odds for women under the poorest wealth index category, holding all other factors constant as seen also on Table 12. In addition, the odds will further decrease by a factor of 0.71 for each transition to the middle, richer, and richest category. Bari and Khan (2014) have also shown that wealth index negatively affects the ideal number of children in Pakistan. Wealth index is also a significant predictor of fertility level particularly, among those who are within the rich or richest wealth index where the mother showed a significant association with low fertility level (Alaba, Olubusoye, & Olaomi, 2017).

More specifically, the estimated probability of having less children than the desired number of children for women classified under the 'poor' wealth index category is 4.6 percentage points higher compared to women classified under the 'poorest' wealth index category. In addition, the estimated probability further increases by 4.6 percentage points for each transition to the 'middle', 'richer', and 'richest' category.

Similarly, the estimated probability of meeting the desired number of children for women classified under the 'poor' wealth category is 2.0 percentage points higher compared to women classified under the 'poorest' wealth category. In addition, the estimated probability of actualization of desired fertility further increases by 2.0 percentage points for each transition to the 'middle', 'richer', and 'richest' category. Lastly, the estimated probability of exceeding the ideal number of children for women classified under the 'poor' wealth category is lower by 6.7 percentage points compared to women classified under the 'poorest' wealth category. In addition, the estimated probability of exceeding desired fertility further decreases by 6.7 percentage points for each transition to the 'middle', 'richer', and 'richest' category.

Wanted last pregnancy

Table 15. Average Marginal Effects of Wanting Last Pregnancy on the Actualization of the Ideal Number of Children

Last pregnancy is wanted	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	.1971983	.0281093	7.02	0.000
Actual fertility equals desired fertility	.0867278	.0120175	7.22	0.000
Actual fertility exceeds desired fertility	-.2839262	.0346515	-8.19	0.000

For women who wanted their last pregnancy, the estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children is 0.24 times the estimated odds for women who did not want their last pregnancy, controlling for all other factors.

Table 15 shows that for women whose last pregnancy is wanted, the estimated probability of not reaching the ideal number of children is higher by 19.7 percentage points compared to women whose last pregnancy is unwanted. In addition, the estimated probability of actualization of desired fertility for women whose last pregnancy is wanted is roughly 8.7 percentage points higher compared to women whose last pregnancy is unwanted. Consequently, the estimated probability of exceeding desired fertility for women whose last pregnancy is wanted is 28.4 percentage points lower compared to women whose last pregnancy is unwanted. This appeals to reason since women who wanted their last pregnancy are more likely to belong in the category with less or equal actual fertility than their ideal number of children. This can be viewed in a sense that unwanted pregnancies might have been caused by already having an excessive number of children.

Husband's ideal number of children

Table 16. Average Marginal Effects of the Husband's Ideal Number of Children on the Actualization of the Ideal Number of Children

Husband's ideal no. of children	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	-.0537572	.0208686	-2.58	0.010
Actual fertility equals desired fertility	-.0236424	.0092261	-2.56	0.010
Actual fertility exceeds desired fertility	.0773997	.0295847	2.62	0.009

The estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children for women who share the same ideal number of children with their husband is 47.68 percent higher than the estimated odds for women whose husband's ideal number of children is lower, controlling for all other factors. The odds further increase by 47.68 percent for women whose husband's ideal number of children is higher. Husband's ideal number of children is depicted as the agreement between the husband and wife on reproductive decisions on the number of children. Lack of mutual understanding between the decisions on the number of children can cause barrier in controlling fertility.

For women who share the same ideal number of children with their husband, the estimated probability of not meeting the ideal number of children is 5.4 percentage points lower compared to women whose husband's preferred number of children is lower. The estimated probability further decreases by 5.4 percentage points for women whose husband's ideal number of children is higher. In addition, the estimated probability of actualization of desired fertility for women who share the same ideal number of children with their husband is 2.4 percentage points lower compared to women whose husband's desired number of children is lower. The estimated probability further decreases by 2.4 percentage points for women whose husband's ideal number of children is higher. Consequently, the estimated probability of exceeding the desired number of children for women who share the desired number of children with their partner is 7.7 percentage points higher compared to women whose husband's desired number of children is lower. The estimated probability further increases by 7.7 percentage points for women whose husband's ideal number of children is higher. Interestingly, these results suggest that when a woman's desired number of children is higher compared to her husband, it is more likely that the woman will meet her ideal number of children instead of having less children. In this scenario, the woman's preference somehow 'dictates' the actual number of children. However, when a woman's desired number of children is less than her husband/partner's, it is more likely

that the woman will exceed her desired number of children. In this scenario, the preference of the husband 'dictates' the actual number of children.

Tried delaying pregnancy

Table 17. Average Marginal Effects of Using Contraceptives to Try and Delay Pregnancy on the Actualization of the Ideal Number of Children

Tried to delay or avoid pregnancy	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	-.0934136	.0257214	-3.63	0.000
Actual fertility equals desired fertility	-.0410833	.0117391	-3.50	0.000
Actual fertility exceeds desired fertility	.1344969	.0362183	3.71	0.000

For every level of actualization of the ideal number of children, the estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children for people who have tried to delay or avoid pregnancy is 96.89 percent higher than the estimated odds for women who have not tried to delay or avoid pregnancy, controlling for other factors.

The estimated probability of having less children than desired for women who have tried to delay or avoid pregnancy is 9.3 percentage points lower as compared to those who have not. In addition, the estimated probability of actualization of desired fertility for women who have tried to delay or avoid pregnancy is roughly 4.1 percentage points lower compared to those who have not. Consequently, the estimated probability of exceeding the ideal number of children for those who tried to delay or avoid getting pregnant is 13.4 percentage points higher compared to those who have not. This could be indicative of a knowledge and practice gap on contraceptive usage since it appears that women are more likely to use methods to try to avoid or delay pregnancy once they have already exceeded their desired number of children.

Emotional Abuse

Table 18. Average Marginal Effects of Emotional Abuse on the Actualization of the Ideal Number of Children

Experienced emotional abuse	Marginal Prob.	Delta-method Std. Err.	z	P>z
Lower fertility than desired fertility	-.0770964	.0294398	-2.62	0.009
Actual fertility equals desired fertility	-.033907	.0130806	-2.59	0.010
Actual fertility exceeds desired fertility	.1110034	.041778	2.66	0.008

The results showed that for every level of actualization on the ideal number of children, the estimated odds of leaning towards exceeding the ideal number of children rather than not attaining the ideal number of children for women who suffered from emotional abuse is 74.92 percent higher than the estimated odds for women who have not experienced emotional abuse from their partners.

For women who have experienced emotional abuse, the estimated probability of not meeting the desired number of children is 7.7 percentage points lower compared to women who have not suffered from emotional abuse. In addition, the estimated probability of having the same number of children as desired for women who suffered from emotional abuse is 3.4 percentage points lower than those who have not. Consequently, the estimated probability of exceeding desired fertility for women who suffered from emotional abuse is 11.1 percentage points higher compared to women who have not experienced emotional abuse. This is possibly because a woman with a violent husband sees that the non-use of contraceptive during sex can diffuse the conflict within the union. This endangers the sexual and reproductive health of the woman due to the increased possibility of unintended and unwanted pregnancies (Solanke & Shobanke, 2014).

6. Conclusion

The results have shown that religious affiliation to the Roman Catholic church, wealth, husband's ideal number of children, usage of contraceptives to delay pregnancy, experience of emotional abuse from spouse and whether the woman wanted the pregnancy of her last child are significant factors that affect the actualization of a woman's ideal number of children.

Actualization of the ideal number of children is not only affected by women preferences and characteristics. In fact, it can also be attributed to factors such as the husband's level of education and preference on the ideal number of children has an effect on the gap between actual and desired fertility. When the husband's preference on the ideal number of children is higher, there is a tendency for the actual fertility to exceed the desired fertility. However, men with higher level of education tend to be more receptive to the ideal number of children set by women and this can play a major role in reducing actual fertility among Filipino women. One of the provisions of the Responsible Parenthood and Reproductive Health Law is to equip each parent with the necessary information on all aspects of family life, including reproductive health and responsible parenthood in order to make the determination of their ideal number of children. The State is also mandated to provide age-and-development appropriate reproductive health education to adolescents, which shall be taught by trained teachers and is integrated within the curriculum. Strengthened implementation and information dissemination of knowledge regarding family life, teen pregnancy, reproductive health and responsible parenthood across all demographic can help mitigate and stabilize the country's fertility rate.

Meanwhile, usage of contraception or any other method to delay or avoid pregnancy is more likely a sign that a woman's number of CEB exceeded her ideal number of children. This suggests that couples only tried considering contraception or any other similar method once they have already exceeded their ideal number of children. Likewise, this may also indicate that women may have been more educated nowadays with contraception methods and use that knowledge to reduce actual fertility. In this case, the government should extend its efforts and strengthen the dissemination of information regarding the universal access to full range of modern family planning methods such as medical consultations and necessary procedures for couples deciding to have children. Furthermore, poor and marginalized women should be prioritized when it comes to the distribution and access to family planning supplies and reproductive healthcare.

Experience of emotional abuse also showed a troubling result. The odds of exceeding the ideal number of children are higher for women who experience emotional abuse. This is because intimate partner violence, which encompasses physical, emotional and sexual abuse, is linked to higher number of pregnancies due to possible sexual coercion and refusal to practice safe sex, and prevention of pregnancy control methods by the woman's husband. Thus, enforcing existing legislation and creating laws to address intimate partner abuse, such as the Anti-Violence Against Women and Their Children Act of 2004, would lessen experience of spousal abuse, especially in women, and help women meet their ideal number of children. Furthermore, incorporation of knowledge and skills on self-protection against discrimination and sexual abuse, and violence against women and children should be included in the curriculum of both public and private schools to equip the youth to reject violence as part of healthy relationships and develop effective conflict resolution behaviors in relationships.

In conclusion, strengthened implementation of laws regarding responsible parenthood and women empowerment, such as the national policy on Responsible Parenthood and Reproductive Health and Anti-Violence Against Women and Their Children Act of 2004, is important because there are unintended social costs arising from mistimed, unplanned and increased number of pregnancies. Parents who are able to space their children and achieve their desired number are more likely able bear the cost of raising and educating them. In contrast, poor families having more children are constrained to rely more on public education and health services and other publicly provided goods and services.

7. Recommendations

The researchers would like to look at spatial and time series analysis for this topic because different literatures suggested that the effect of different socio-economic variables are different for different countries and regions within a country. Time dependent variables, such as the number of children during the

interview, should also be considered because it can affect the actualization of the ideal number of children. Also, differential studies regarding demographic cohorts might provide insightful results on how the actualization of the ideal number of children varies through generations.

In addition, the researchers would also like to recommend looking at biological and health related factors and study how they affect a household's realization of their desired number of family members. Studies regarding what affects the total CEB and ideal number of children are hard to come by in the Philippine context thus, the researchers suggest exploring these topics further to be able to envisage how different factors affect the fertility of Filipinas and perceive the direction of the country's population growth.

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