Ignorance or Unmet Need? Identifying the best predictor for changes in total fertility rate.

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Abstract

Unmet need for family planning has been adopted as a Millennium Development Goal (MDG) indicator however, the question of its validity continues to remain and it remains to be shown whether this measure is the best predictor of changes in total fertility rates. The first aim of the paper is to display the weakness of unmet need as a predictor of fertility decline. The second aim is to develop empirical evidence for a stronger indicator to predict TFR trends. This paper explains why the need to truly determine the utility of this indicator is vital and how, from the analysis of all the available unmet need data from DHS surveys from more than 80 countries conducted over the last 20 years, unmet need falls short as a predictor of fertility trends.

Background

Unmet need is calculated in the demographic and health (DHS) surveys based on survey responses indicating that a fecund woman desires fertility limitation but is not using a modern method of contraception. The measure has been criticized because it includes women who are unmarried or not sexually active, or who have medical concerns about oral contraception.

The world has placed a significant amount of faith in the measure of unmet need as a benchmark for priority setting family planning policy. There are several controversies surrounding the indicator, one being the aggregate- level validity of the concept of 'unmet need for family planning and whether it is high enough to produce significant reductions of fertility if this 'need' were satisfied (Casterline and Sinding 2000). If unmet need correctly predicts the discrepancy between fertility preferences and contraceptive practice, then the adoption of contraception, at the aggregate level, should result in an increase in contraceptive prevalence and a decrease in fertility (Casterline and Sinding 2000). If this is not the case, and fertility decline is the result of other factors, such as changes in fertility desires (Pritchett 1994) then unmet need would have limited utility to inform population policy and impact unwanted fertility rates. Considering the degree to which the unmet need indicator is used for advocacy, for developing family planning policies and in implementation of programs, it may be time to rethink our investments as they may not be targeted to those with the greatest demand.

Studies have shown that addressing unmet need results in a very small impact on fertility decline (Pritchett 1994) and yet, current population policies have taken on reducing unmet need as a target within itself, not necessarily questioning if it is truly a means for achieving larger demographic goals. We argue in this paper that changes in unmet need are not the strongest predictor of changes in total fertility and that, when adjusting for human development indicators, such as GDP and primary school completion rates for females, unmet need fails to predict changes in total fertility rate across countries and years.

Further, we attempt to establish empirical evidence for a case for a better measure of FP sensitive demand based on DHS surveys, particularly looking into questions about women's ability to access family planning services and reasons for not contracepting. We argue that DHS has indicators that can better predict fluctuations in total fertility rate, and that a simple indicator such as percentages of women who know no source of contraceptive methods, will predict fertility trends more so than unmet need and can be a better guide for population policies and agendas.

Methods

Sample

The data for this analysis came from all available Demographic and Health Surveys from 84 countries, from surveys ranging from 1985-2010, as well as from the World Bank DataBank , from the World Development Indicators and Education Statistics databases, from 1960-2010.

The primary outcome of interest was annual differences in total fertility rates. The independent variables included annual changes in unmet need, in GDP per capita, primary schooling completion rates for females as well as a DHS measure for reason for not using contraception. The list of countries that contributed data for this analysis is shown in an appendix.

Measures and Analysis

We will conduct two main analyses. The first involves incorporating Human Development predictors of TFR, including GDP per capita and completed rates of female primary schooling to challenge the reliability of unmet need in predicting changes in TFR over time. In this analysis we will determine the impact of adjusting for confounders such as the change in GDP and primary schooling completion levels on unmet need as a predictor of TFR. Our effort here will be to examine the way in which unmet need is altered by these aggregate measures in the prediction model. The second step is to include potential 'challengers' (DHS measures) to unmet need in predicting trends in TFR change.

Although we understand the relationship between the predictors and dependent variable is not exactly linear, we adjusted for this by fitting a quadratic model, however the model fit was not nearly as convincing as that of a linear model below. Two countries were excluded from the analysis, Boliva and Congo, as they were significant outliers. The outcome of the regression is the change in TFR with five independent variables of interest (GDP, Female Primary Schooling, Reason for non-use of contraception, Unmet Need).

Thus, the equation used is:

$$\Delta TFR/(\Delta T) = \Delta GDP/(\Delta T) + \Delta METHOD/(\Delta T) + \Delta SCHOOL/(\Delta T) + \Delta UNMET/(\Delta T)$$

Preliminary Results

Human Development Indicators
Preliminary results show that there is a weak correlation between change in unmet need and change in TFR in countries with more than one DHS survey. Unadjusted results show that for every increase in 1 point of unmet need, a change in TFR is significantly although minimally reduced by 0.02 points ($p<0.05$), not controlling for the HDIs. Upon adjusting for GDP per capita and primary schooling completion rates, unmet need 's correlation with TFR becomes insignificant (Table 2 Model 2).

Other DHS measures of reasons for non-use of contraception
Preliminary results of DHS measures to predict fertility trends display possibilities in isolating an indicator that more closely predicts trends in TFR. Thus far, DHS reasons for non-contraceptive use (no knowledge of method, no knowledge of source, no access to family planning etc) have been regressed against changes in TFR and early results display a fairly strong relationship between changes in TFR and the change in percentages of those whose reasons for not contracepting is because they have no knowledge of family planning methods. As shown in Table 5, the rate of change in women who know no source of contraception is a significant predictor of the rate of change in TFR with a coefficient of 0.053 ($p<0.01$). This predictor remains significant when HDI indicators are included. It also remains significant when unmet need is included in the analysis.

Discussion

Logically, if unmet need were a good indicator for changes in TFR then changes in unmet need would be correlated with changes in unwanted fertility, as this is precisely the end goal policies and programs are targeting in addressing unmet need. Our analysis suggests the need to revisit other measures of success in a countries family planning program performance. If donors are considering metrics in order to pay for performance—paying to reduce the proportion of women who know no source for contraception appears to have promise as a more meaningful benchmark.

References

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Table 1 Country Level Statistics

Characteristics of DHS Countries in Study	**Mean (Std.)**
Percentage of those whose reason for non-use is knows no contraceptive method	4.59 (5.32)
Primary Schooling Rate	58.23 (30.57)
GDP per Capita	980.22 (1456.23)
Unmet Need	21.42 (9.04)
Total Fertility Rate	4.39 (1.51)

Table 2: Main Preliminary Results

VARIABLES	Dependent Variable is Rate of Change in Total Fertility Rate			
	Model 1	Model 2	Model 3	Model4
Rate of Change in Knows No Method	0.053*** [2.970]		0.053*** [2.970]	0.058*** [3.086]
Rate of Change in Schooling	-0.000 [-0.068]	-0.000 [-0.016]	-0.000 [-0.068]	-0.000 [-0.082]
Rate of Change in GDP per Capita	-0.000 [-0.328]	0.000 [0.243]	-0.000 [-0.328]	-0.000 [-0.686]
Rate of Change in Unmet Need (per DHS)		0.005 [0.393]		0.018 [1.358]
Constant	-0.030 [-1.350]	-0.051*** [-3.520]	-0.030 [-1.350]	-0.025 [-1.107]
Observations	29	45	29	29
R-squared	0.222	0.004	0.222	0.242

Appendix Countries with DHS data used in study

Countries	>1 Knows no method measure	>1 unmet Need Measure	Used Model 1, 3, and 4	Model 2
Albania				
Angola				
Armenia	X	X		X
Azerbaijan		X		
Bangladesh	X	X		X
Benin	X	X	X	
Botswana				
Bolivia				
Brazil	X	X		X
Burkina Faso	X	X	X	X
Burundi				
Cambodia	X	X	X	X
Cameroon	X	X	X	X
Cape Verde				
Central African Republic				
Chad	X		X	
Colombia	X		X	

Comoros		X		
Congo		X		0
Cote d'Ivoire	X	X		X
Democratic Republic of Congo				
Dominican Republic	X	X	X	X
Ecuador				
Egypt	X	X	X	X
El Salvador				
Ethiopia	X	X	X	X
Eritrea	X	X	X	X
Gabon		X		
Georgia				
Ghana	X	X	X	X
Guatemala	X	X		X
Guinea	X	X	X	X
Haiti	X	X		X
Honduras		X		
India	X	X	X	X
Indonesia	X	X	X	X
Jamaica				
Jordan	X	X		X
Kazakhstan		X		
Kenya	X	X		X

Kyrgyz Republic		X		
Lesotho		X		
Liberia		X		
Madagascar	X	X	X	X
Malawi	X	X		X
Maldives		X		
Mali	X	X	X	X
Mauritania		X		
Mexico				
Moldova		X		
Morocco	X	X		X
Mozambique	X	X		X
Namibia		X	X	
Nepal	X	X	X	X
Nicaragua	X	X	X	X
Niger	X	X	X	X
Nigeria	X	X		X
Pakistan		X		
Paraguay				
Peru	X	X	X	X
Philippines	X	X	X	X
Romania				
Rwanda	X	X		X

Senegal	X	X		X
Sierra Leone				
South Africa		X		
Sri Lanka				
Sudan				
Swaziland		X		
Tanzania	X	X		X
Thailand				
Timor-Leste		X		
Togo		X		
Trinidad and Tobago				
Tunisia				
Turkey	X	X		X
Turkmenistan		X		
Uganda	X	X		X
Ukraine				
Uzbekistan		X		
Vietnam	X	X		X
Yemen	X			
Zambia	X	X	X	X
Zimbabwe	X	X		X

* ‘X’ indicates included in the analysis.