

# Child marriage and intimate partner violence: Implications for policymakers

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Metis “Project McNulty”

# Definitions

## **Intimate Partner Violence (IPV):**

## **WHO Definition**

“Any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship”

## **Child marriage:**

## **UN Definition**

“A formal marriage or informal union, such as cohabitation, before age 18 or legal age of consent in the country of interest”  
(Pakistan’s age of consent is 16 for women)

# Rationale

- Child marriage impinges on human rights
  - 14.2 million girls annually (**39,000 daily**) become child brides
- IPV is “hidden” threat to women’s health
  - Worldwide, almost one third (30%) of women who have been in a relationship report that they have experienced some form of IPV
  - Globally, as many as 38% of murders of women are committed by an intimate partner.

# Rationale

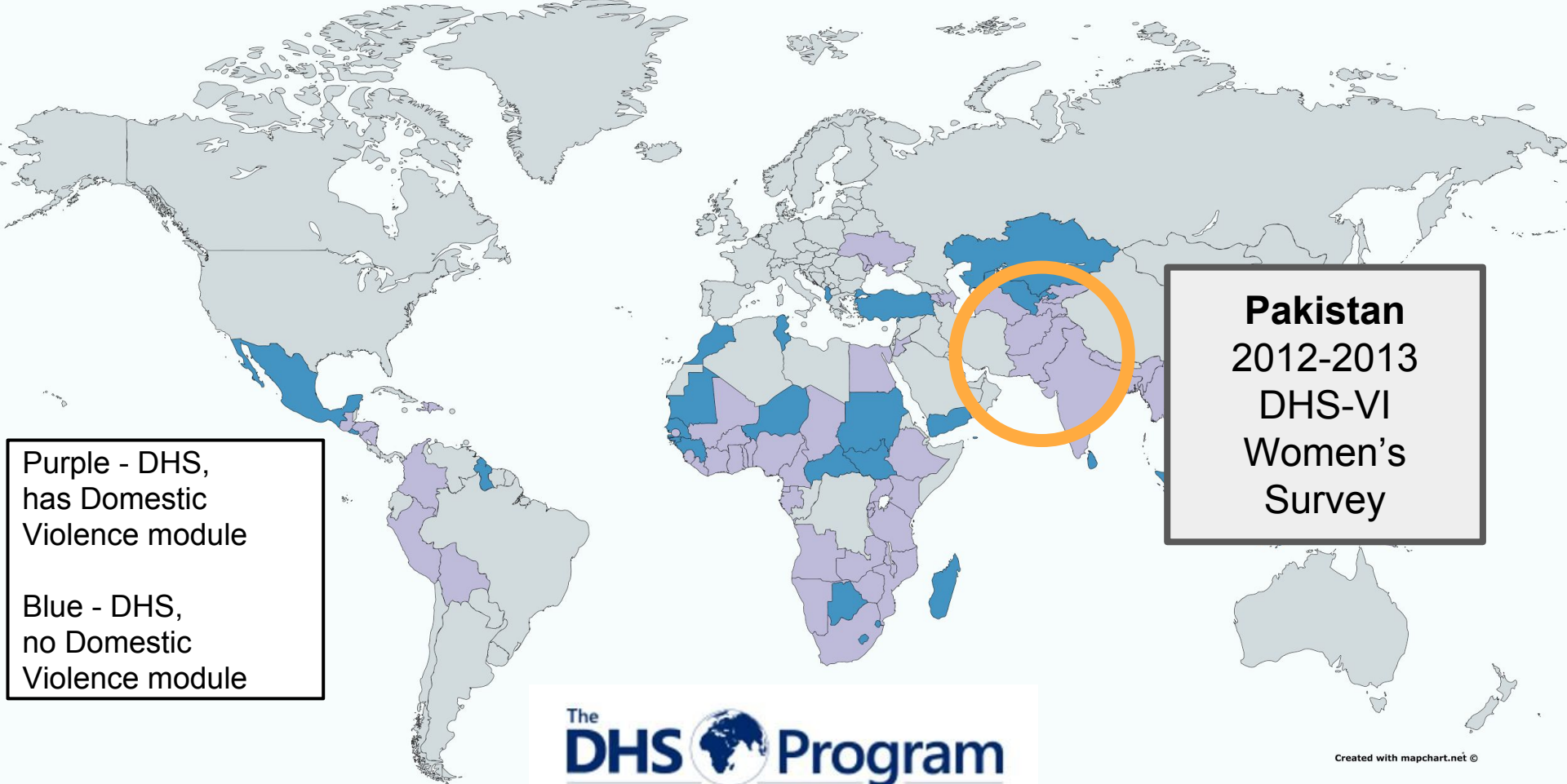
- Child marriage impinges on human rights
- 14.2 million girls annually (39,000 daily) become child brides

Data Source: UNFPA 2016

- IPV is “hidden” threat to women’s health
- Worldwide, 30% of women who have been in a relationship report that they have experienced some form of IPV
- Globally, as many as 38% of murders of women are committed by an intimate partner.

# Demographic and Health Survey (DHS)

- Comprehensive **household and individual surveys** in LMIC
- Questionnaires standardized, with optional focus modules added
- Provides the raw data for **World Bank Indicators**
- Accessible to the public, with project approval, at <http://www.dhsprogram.com/>
- **Summary statistics** available without registration at <http://api.dhsprogram.com/>



# Methods

**Target:** Ever abused (“yes”, “sometimes”, “often”)

**Base:** Women selected and interviewed for the Domestic Violence survey module, who currently are in a relationship

## Features:

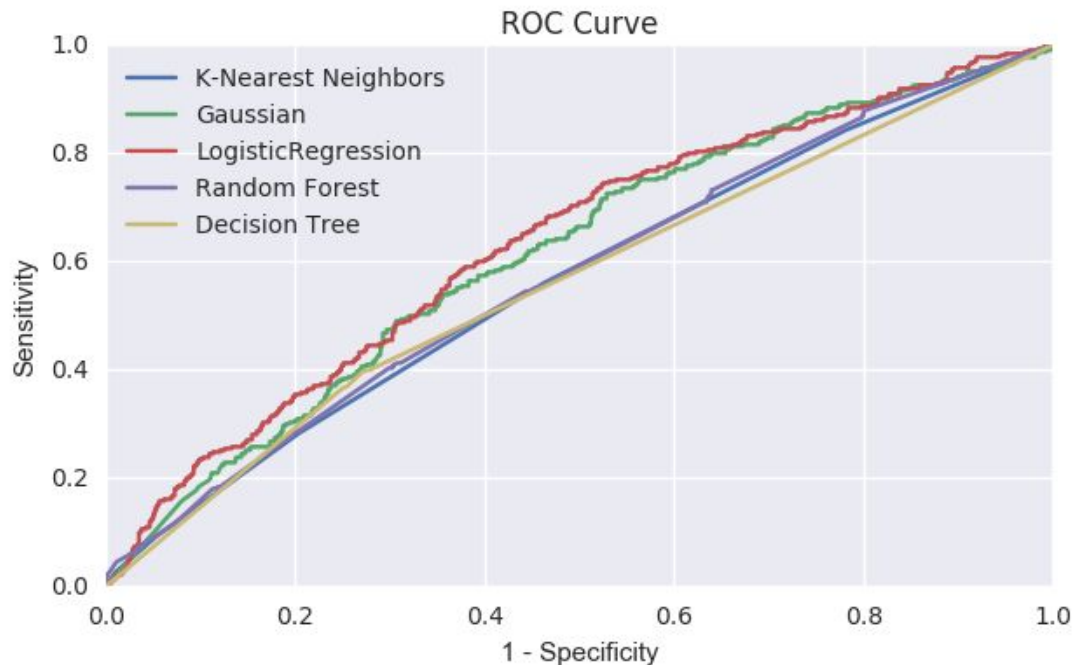
- Respondent's **current age** (15-49 continuous)
- **Age at marriage** (Dichotomous over/under 16)
- Highest **educational level** achieved (no school, primary, secondary, higher)
- Household **assets** (own refrigerator, bicycle, motorcycle, car/truck, radio)
- **Household attributes** (floor/roof/wall types, sanitation and water)
- Cooking fuel used, is household electrified



Model I:  
**Determine households with  
women at risk**



# Methods I: Training the Model



## Interpretation

- For most thresholds, Logistic Regression model outperforms
- Gaussian Naive Bayes also performs well
- **Next step:** Determine threshold

# Methods I: Determining Threshold



## Interpretation

- TPR = FPR at threshold = 0.294
- **Next step:** We can feed this back into our model to strengthen our classification

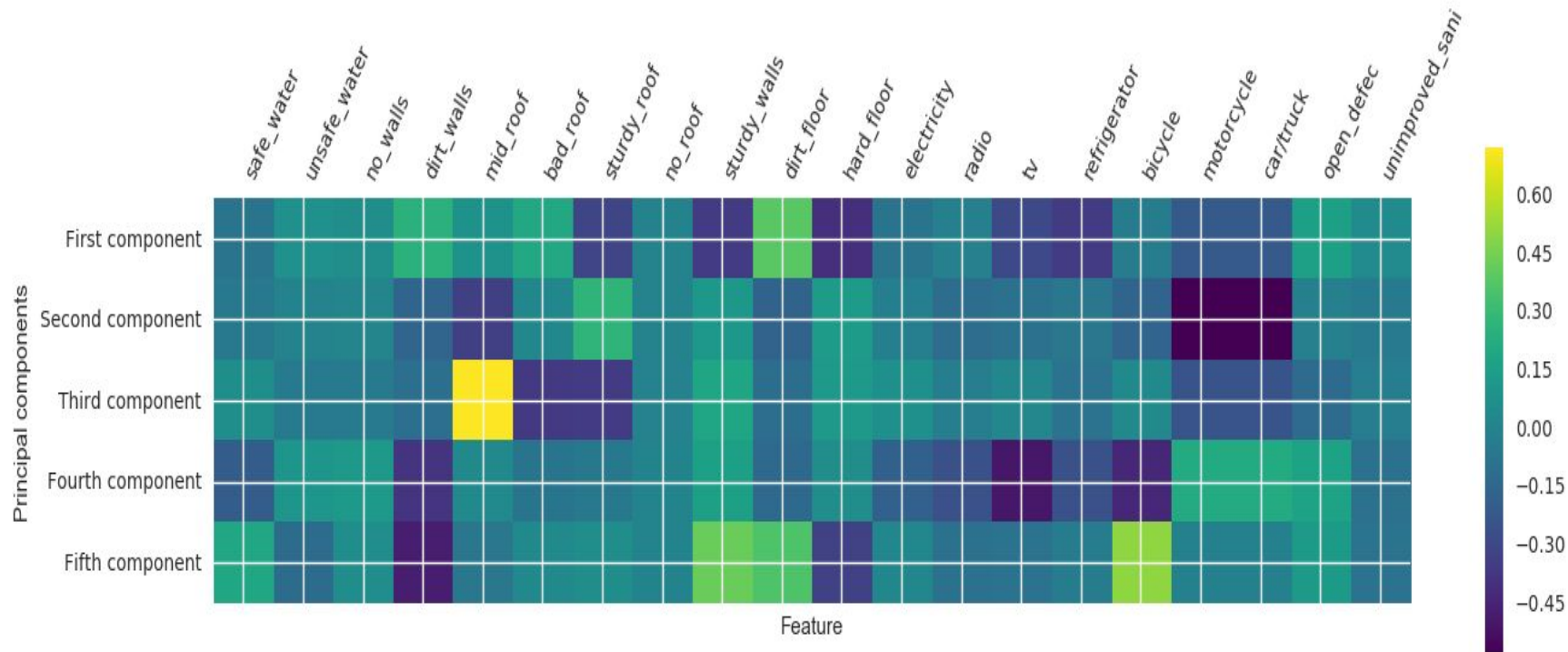
# Methods I: Predictive Power

If we are willing to accept false positives, we can reduce the threshold to ensure we capture more **recall**:

Threshold	t= 0.5 (default)	t= 0.3	t= 0.1
Precision			
0	0.72	0.77	0.80
1	0.37	0.38	0.37
Recall			
0	0.98	0.73	0.57
1	0.02	0.42	0.64

Model II:  
**Does child marriage  
increase risk of IPV?**

# Methods II: Building a Wealth Index



# Logit Regression Results

Odds Ratio =  $e^{0.3129} = 1.367$

Therefore, holding other factors constant, women married before age 16 in Pakistan are **37% more likely** to experience intimate partner violence than her later-married peer.

	coef	std err	z	P> z	[95.0% Conf. Int.]	
age	0.0043	0.005	0.934	0.350	-0.005	0.013
ul6_marriage	0.3129	0.091	3.433	0.001	0.134	0.492
no_edu	-1.0677	0.183	-5.826	0.000	-1.427	-0.709
primary_edu	-1.0576	0.184	-5.761	0.000	-1.417	-0.698
secondary_edu	-1.3879	0.176	-7.870	0.000	-1.734	-1.042
higher_edu	-1.9346	0.209	-9.242	0.000	-2.345	-1.524
0	0.0909	0.020	4.643	0.000	0.053	0.129
1	0.0130	0.028	0.468	0.640	-0.041	0.067
2	0.0592	0.029	2.036	0.042	0.002	0.116
3	0.0178	0.032	0.553	0.580	-0.045	0.081
4	-0.1325	0.036	-3.684	0.000	-0.203	-0.062

# Limitations

- Only 21 features considered for the “Wealth Index”
- PCA explains 61% of the variance across these features
- Based on cross-sectional study, presence of multiple confounding factors

# Next Steps

- Improve “Wealth index” by incorporating more assets from household survey
- Capture husband’s attitudes and practices from men’s survey
- Addition of other countries’ data

**Thank you.**

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# Resources

Kidman R (2016). Child marriage and intimate partner violence: a comparative study of 34 countries. Int J Epidemiol. Available from:  
[ <https://www.ncbi.nlm.nih.gov/pubmed/27733435> ]

DHS Domestic Violence Module Questionnaire:  
[ <http://dhsprogram.com/pubs/pdf/DHSQM/DHS7-Module-DomViol-Qnaire-EN-06Jun2016-DHSQM.pdf> ]

DHS-VI Full Recode Questionnaire:  
[ [http://dhsprogram.com/pubs/pdf/DHSG4/Recode6\\_DHS\\_22March2013\\_DHSG4.pdf](http://dhsprogram.com/pubs/pdf/DHSG4/Recode6_DHS_22March2013_DHSG4.pdf) ]

# Methods II: Comparing Models

## Logit Regression Results

Dep. Variable:	physical_dv	No. Observations:	3685
Model:	Logit	Df Residuals:	3675
Method:	MLE	Df Model:	9
Date:	Fri, 28 Oct 2016	Pseudo R-squ.:	0.03306
Time:	01:27:51	Log-Likelihood:	-2121.1
converged:	True	LL-Null:	-2193.7
		LLR p-value:	9.306e-27

	coef	std err	z	P> z	[95.0% Conf. Int.]	
age	0.0044	0.005	0.945	0.345	-0.005	0.013
no_edu	-0.9905	0.181	-5.458	0.000	-1.346	-0.635
primary_edu	-0.9993	0.182	-5.477	0.000	-1.357	-0.642
secondary_edu	-1.3486	0.176	-7.675	0.000	-1.693	-1.004
higher_edu	-1.9221	0.209	-9.191	0.000	-2.332	-1.512
0	0.0927	0.020	4.744	0.000	0.054	0.131
1	0.0104	0.028	0.375	0.708	-0.044	0.065
2	0.0601	0.029	2.070	0.038	0.003	0.117
3	0.0198	0.032	0.615	0.538	-0.043	0.083
4	-0.1226	0.036	-3.430	0.001	-0.193	-0.053

# PR Curve for Logistic Regression

