Cambodians rank among the lowest users of contraceptives in Asia, with only about 24 percent of married women in 2000 using contraception and about 30 percent in 2010. In comparison, around 57 percent of married couples in 2000 in the developing world used contraceptives. In order to understand disparities within Cambodia on contraceptive use, I attempt to conduct a spatial and statistical analysis using Demographic and Health Surveys data of women. The survey was conducted between June 2010 and January 2011 with 18,754 women aged 15-49 representing the entire country. For the analysis, I used Stata to run regressions and ArcMap to view spatial clustering and densities. While the government has made efforts to increase contraceptive use in the past couple of decade and fertility rates have dropped significantly, cultural and societal norms, female empowerment issues, lack of access to health centers, and general poverty have prevented more widespread use.

### Methodology

For my analysis, I started by aggregating the individual data on contraceptive use to the clusters by creating a dummy variable for contraceptive use and then calculated the proportion of people in the cluster who used contraceptives. Using a local Moran’s I, ArcMap was able to reveal clustering of the data on contraceptive use. Seeing this clustering, I created a new variable of distance of each DHS cluster to a hospital or health clinic in order to see if there was a relationship between access to health clinics and higher rates of contraceptive use. I used Kernel Density to reveal health center density in Cambodia showing that in denser areas contraceptive use is higher. I ran a regression using Stata to better understand the effects on contraceptive use. The dependent variable is a dummy variable for contraceptive use, and the independent variables are distance to health centers, wealth, education, insurance, religion, female empowerment, region, and dummy variables for each district.

### Results

### Variables affecting contraceptive use:

1. Religion (25-26% more likely to use if Buddhist)
2. Whether insurance covers contraceptives (11-12% less likely to use if it does)
3. Distance to Health Centers (For every 1km away a woman is from a center, she is 2% less likely to use. High user clusters are in areas with denser health centers.)
4. Wealth (The poorest Cambodians are 15% less likely to use than the richest. High user clusters are in wealthier areas.)
5. Education (Women are 3% more likely to use contraception for every additional year of education.)
6. Female empowerment (If women believe they can refuse sex to their husbands, they are 10% more likely to use. This variable is more significant than wealth.)
7. Region (The region a woman lives in will have a significant affect on contraceptive use.)

### Discussion

While wealth, religion, region, and distance to health centers certainly impact contraceptive use, outliers and variation exists. Cambodia continues to struggle with low contraceptive rates compared with other developing nations. Our results show that there are certain variables affecting contraceptive use in the country, but the clustering of users and non-users cannot be explained by these variables alone. Background research on the issue revealed that there were significant societal and cultural restraints preventing more widespread acceptance of contraceptives as a means of family planning. The clustering of users might also be a result of governmental, non-governmental, or international agency related programs in certain districts to increase contraceptive rates. Additional research on the impact of certain programs on contraceptive rates is needed. In general other aspects of female empowerment might have an impact on contraceptive rates too. We already saw that women who say they can refuse sex to their husbands are also more likely to use contraception. While we may not be able to understand fully what affects contraceptive use in Cambodia from this study alone given the lack of data on issues related to societal and cultural norms, we can more deeply understand the impact of religion, wealth, and female empowerment on contraceptive rates.

Data: DHS (in conjunction with the Cambodian Ministry of Planning/ National Institute of Statistics and the Ministry of Health/ Directorate for General Health); Data on Health Centers and Hospitals comes from the National Institute of Statistics for Cambodia. Projected Coordinate System: WGS 1984 UTM Zone 48N; Projection: Transverse Mercator