Big Data for Reproductive Health (BD4RH) 2021-2022
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Course Objective: This year’s team sought to develop novel models to evaluate reproductive health challenges using data science in partnership with IntraHealth International’s digital health team and the Center for Global Reproductive Health’s Kenya-based research team.

Project 1: Analyzing access to modern contraception among women with developmental disabilities in North Carolina: A mixed-methods study

ABSTRACT

Women with intellectual and developmental disabilities (IDD) have similar age-specific fertility rates1 and are more likely to engage in unsafe sex.2 However, significant barriers to accessing contraception exist.3 Comprehensive data regarding contraceptive access in North Carolina is currently lacking, public surveys may exclude individuals who live in institutional settings, and little is known about the landscape of reproductive health within residential facilities. This study aims to identify differences in contraceptive access among women with IDD by procedure type and contraceptive type, as well as understand barriers to care. We will apply big data techniques to NC Medicaid claims data and conduct interviews with staff at six public and private residential facilities. Analysis will be conducted from February to July 2022, with the final goal of a manuscript to inform policy initiatives.

QUALITATIVE METHODS

ABSTRACT

We sought to understand how armed conflict impacts contraceptive use before, during, and after conflict in Mali, Zimbabwe, Nigeria.

METHODS

We incorporated geo-located data from Demographic and Health Surveys (DHS), and Uppsala Conflict Data Program (UCDP), which allowed us to investigate contraceptive use among women within 15 kilometers of conflict sites. We also used Organisation for Economic Co-operation and Development (OECD) data to control for the amount of foreign aid these countries received for family planning each year. Linear regression model

OUTCOME VARIABLES

Outcome variables include abortion rate, conception rate, contraception start rate, contraception switch rate, and discontinuation rate

RESULTS

We registered zero effects across all 3 countries, implying that there is no difference in abortion rate, contraceptive rate, contraception start rate, switch rate, or discontinuation in conflict regions in the time periods before, during, and after conflict. Results for Zimbabwe are below:

DISCUSSION

In each of the 3 countries studied (Mali, Zimbabwe, and Nigeria), intensity and nature of conflict do not affect family planning use and uptake by the population living within 15 kilometers of the conflict site.

Next Steps

Future research should incorporate more control variables and account for cultural factors.

Project 2: Analyzing the Association Between Armed Conflict and Contraceptive Use In Mali, Zimbabwe, and Nigeria

ABSTRACT

What is the impact of armed conflict on women’s contraceptive use?

METHODS

We incorporated geo-located data from Demographic and Health Surveys (DHS), and Uppsala Conflict Data Program (UCDP), which allowed us to investigate contraceptive use among women within 15 kilometers of conflict sites. We also used Organisation for Economic Co-operation and Development (OECD) data to control for the amount of foreign aid these countries received for family planning each year. Linear regression model

RESULTS

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DISCUSSION

In each of the 3 countries studied (Mali, Zimbabwe, and Nigeria), intensity and nature of conflict do not affect family planning use and uptake by the population living within 15 kilometers of the conflict site.

Next Steps

Future research should incorporate more control variables and account for cultural factors.

Project 3: Using Natural Language Processing (NLP) Techniques to examine Stigma with Cervical Cancer in Kenya

ABSTRACT

Due to a lack of research on the application of NLP with stigma data, we used 26 in-depth interviews conducted among Kenyan women (both HIV-positive and negative), community health volunteers (CHVs), and healthcare providers in Kisumu, Kenya in 2019 as part of a study attempting to develop a stigma framework due to the stigma associated with HPV and cervical cancer in Kenya.

METHODS

Due to a lack of research on the application of NLP with stigma data, we used 26 in-depth interviews conducted among Kenyan women (both HIV-positive and negative), community health volunteers (CHVs), and healthcare providers in Kisumu, Kenya in 2019 as part of a study attempting to develop a stigma framework due to the stigma associated with HPV and cervical cancer in Kenya.

RESULTS

Bigrams (two-word tokens) for 3 topics over entire interviews yielded the most easily interpretable results

DISCUSSION

Rudimentary NLP is not adequate for identifying stigma in qualitative data

Next Steps

Look into applying NLP techniques on larger datasets with varied forms of stigma, such as social media discussions

Use additional NLP techniques outside of topic modeling to draw insights on stigma in qualitative data