Estimating induced abortion rates in the Savanes Region of Togo using the Westoff Regression Approach

Helen Baker, MSc, RN
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Conflict of Interest

I have no conflict of interest to report.
Togo
Togo
Background

- All abortions prior to 2007 were illegal in Togo
- Even when illegal induced abortion still takes place
- Records of illegal abortion are not kept frequently except for cases of post abortion care
- There is a need for estimates of rates of induced abortion in countries with restrictive abortion laws to establish the demand for abortion and post abortion care

(Loi n 84-14 du 16 mai, 1984; Rossier, 2003; World Health Organization, 2007)
“So what are the ‘actual’ numbers?”

- Abortion rates are likely the most inaccurate of all demographic data
- Lack of data available on actual numbers of abortions from health records or direct survey methods
- Women often under report abortions due to stigma, fear, shame
- Health care workers do not want to admit to providing these services due to legal and moral implications

(Johnston & Westoff, 2010; Rossier, 2003; Singh, Remez, & Tartaglione, 2010; Westoff, 2008)
Why do we need this information?

- Unsafe abortion contributes to maternal mortality and morbidity
  - Having estimates will help establish how much induced abortion contributes to maternal mortality and morbidity
  - Knowing the magnitude of illegal/unsafe abortion facilitates an informed discussion on improving women’s reproductive health

(Ahman & Shah, 2007)
Background of the 1998 Togo Demographic and Health Survey

- A standard DHS survey
  - Usually conducted every 5 years in low resource countries
  - Togo 1998 (Phase 3)
  - Conducted research from February-May 1998
    - 7517 Households
    - 8569 Women aged 15-49
    - 3819 Men aged 15-59

- Savanes region: 1679 women aged 15-49
- Analyzed the “Women’s Questionnaire”

(Measure DHS, 1998)
The sample is generally representative:
- At the national level
- At the residence level (urban-rural)
- At the regional level (departments, states)

The sample is usually based on a stratified two-stage cluster design:
- First stage: Enumeration Areas (EA) are generally drawn from Census files
- Second stage: In each EA selected, a sample of households is drawn from an updated list

(Measure DHS, 1998)
Secondary Data Analysis

Purpose

- Question: What are the rates of induced abortion in the Savanes region of Togo represented in the data compiled in the 1998 Togo Demographic and Health Survey?
- Rates were calculated by:
  - Rural/Urban
  - Religion (Animist, Islam, Catholic, Protestant Christian)
  - Ethnicity (Gourma, non-Gourma Togolese, Non-Togolese)
  - Socioeconomic status (Radio in household)
  - Use of prenatal care with first pregnancy
  - Unwanted, mistimed pregnancy status (Last pregnancy wanted, mistimed, unwanted)
Westoff Regression Approach

- Based on knowledge of strong correlation between the contraceptive prevalence rate, education, and the total abortion rate
- Calculated using data from 18 countries
- Use the regression formula (most accurate regression in West African region based on data from Nigeria)

(Westoff, 2008)
Calculating Total Fertility Rates

<table>
<thead>
<tr>
<th>events</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate_1519</td>
<td>0.152802</td>
<td>0.016441</td>
<td>9.29</td>
<td>0</td>
<td>0.119546 0.186057</td>
</tr>
<tr>
<td>Rate_2024</td>
<td>0.316518</td>
<td>0.013209</td>
<td>23.96</td>
<td>0</td>
<td>0.289802 0.343235</td>
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<tr>
<td>Rate_2529</td>
<td>0.322562</td>
<td>0.012888</td>
<td>25.03</td>
<td>0</td>
<td>0.296494 0.34863</td>
</tr>
<tr>
<td>Rate_3034</td>
<td>0.280039</td>
<td>0.016074</td>
<td>17.42</td>
<td>0</td>
<td>0.247526 0.312551</td>
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<tr>
<td>Rate_3539</td>
<td>0.23475</td>
<td>0.025994</td>
<td>9.03</td>
<td>0</td>
<td>0.182172 0.287328</td>
</tr>
<tr>
<td>Rate_4044</td>
<td>0.130171</td>
<td>0.016694</td>
<td>7.8</td>
<td>0</td>
<td>0.096405 0.163937</td>
</tr>
<tr>
<td>Rate_4549</td>
<td>0.076414</td>
<td>0.016371</td>
<td>4.67</td>
<td>0</td>
<td>0.043302 0.109527</td>
</tr>
<tr>
<td>TFR</td>
<td>7.566277</td>
<td>0.296051</td>
<td>25.56</td>
<td>0</td>
<td>6.967457 8.165098</td>
</tr>
</tbody>
</table>

*Schoumaker, 2013*

```
. tw2, cluster(v001)
weight variable is v005
Preparing table of events and exposure for 3 year(s) preceding the survey
Central date is 1996.7287
Number of cases (women): 1674
Number of person-years (weighted): 4765.6338
Number of events (weighted): 1153.0803

ASFRs - TFR
```

(Schoumaker, 2013)
Regression Equation

Total abortion rate = 2.94 - .033(Modern contraceptive prevalence rate) - .252(Total fertility rate) + .091(Mean years of education)

Modern contraceptive prevalence rate = Ever married women who are using modern contraceptive methods/Ever married women

Total Fertility Rate = The average number of children that would be born to a woman over her reproductive lifetime (summation of age specific fertility rates) 15-49 years

(Westoff, 2008)
Regression Equation

- Requires less data manipulation
- Regression is based on data using 18 countries
- This particular model is the most accurate in the West African region
- This is a novel approach to calculating induced abortion rates from DHS data

(Westoff, 2008)
Results
## Demographics

<table>
<thead>
<tr>
<th></th>
<th>Urban (n=340) n(%)</th>
<th>Rural (n=1339) n (%)</th>
<th>Total (n=1679) n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gourma</td>
<td>221 (65.0)</td>
<td>1125 (91.5)</td>
<td>1446 (86.2)</td>
</tr>
<tr>
<td>Non-Gourma Togolese</td>
<td>65 (19.1)</td>
<td>85 (4.1)</td>
<td>120 (7.1)</td>
</tr>
<tr>
<td>(Adja-ewe, Akposso, Ana-ife, Kabye, other)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Togolese</td>
<td>54 (15.9)</td>
<td>89 (4.4)</td>
<td>113 (6.7)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Education</td>
<td>164 (48.2)</td>
<td>1179 (88.1)</td>
<td>1343 (80.0)</td>
</tr>
<tr>
<td>Incomplete Primary</td>
<td>107 (31.5)</td>
<td>139 (10.4)</td>
<td>246 (14.7)</td>
</tr>
<tr>
<td>Complete Primary</td>
<td>5 (1.5)</td>
<td>1 (0.1)</td>
<td>6 (0.4)</td>
</tr>
<tr>
<td>Incomplete Secondary</td>
<td>63 (18.5)</td>
<td>20 (1.5)</td>
<td>83 (4.9)</td>
</tr>
<tr>
<td>Higher</td>
<td>1 (0.3)</td>
<td>0 (0.0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>6 (1.8)</td>
<td>121 (9.0)</td>
<td>127 (7.6)</td>
</tr>
<tr>
<td>Animist</td>
<td>47 (13.8)</td>
<td>726 (54.3)</td>
<td>773 (46.1)</td>
</tr>
<tr>
<td>Islamic</td>
<td>185 (54.4)</td>
<td>158 (11.8)</td>
<td>343 (20.4)</td>
</tr>
<tr>
<td>Catholic</td>
<td>88 (25.9)</td>
<td>179 (13.4)</td>
<td>267 (15.9)</td>
</tr>
<tr>
<td>Protestant</td>
<td>14 (4.1)</td>
<td>154 (11.5)</td>
<td>168 (10.0)</td>
</tr>
<tr>
<td><strong>Proxy SES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owns a radio</td>
<td>216 (63.7)</td>
<td>442 (33.1)</td>
<td>658 (39.9)</td>
</tr>
<tr>
<td>Does not own a radio</td>
<td>123 (36.3)</td>
<td>892 (66.9)</td>
<td>1015 (60.7)</td>
</tr>
</tbody>
</table>
## Demographics Continued

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Urban (n=340) n(%)</th>
<th>Rural (n=1339) n(%)</th>
<th>Total (n=1679) n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>94 (27.6)</td>
<td>227 (17.0)</td>
<td>321 (19.1)</td>
</tr>
<tr>
<td>20-24</td>
<td>86 (19.4)</td>
<td>185 (13.8)</td>
<td>251 (14.9)</td>
</tr>
<tr>
<td>25-29</td>
<td>47 (13.8)</td>
<td>254 (19.0)</td>
<td>301 (17.9)</td>
</tr>
<tr>
<td>30-34</td>
<td>40 (11.8)</td>
<td>259 (19.3)</td>
<td>299 (17.8)</td>
</tr>
<tr>
<td>35-39</td>
<td>38 (11.2)</td>
<td>167 (12.5)</td>
<td>205 (12.2)</td>
</tr>
<tr>
<td>40-44</td>
<td>26 (7.6)</td>
<td>147 (11.0)</td>
<td>173 (10.3)</td>
</tr>
<tr>
<td>45-49</td>
<td>29 (8.5)</td>
<td>100 (7.5)</td>
<td>129 (7.7)</td>
</tr>
<tr>
<td><strong>Marriage</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>102 (30.0)</td>
<td>129 (9.6)</td>
<td>231 (13.8)</td>
</tr>
<tr>
<td>Currently married</td>
<td>211 (62.1)</td>
<td>1156 (86.3)</td>
<td>1367 (81.4)</td>
</tr>
<tr>
<td>Formally married</td>
<td>27 (7.9)</td>
<td>54 (4.0)</td>
<td>81 (4.8)</td>
</tr>
<tr>
<td><strong>Prenatal care with 1st child</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>127 (95.5)</td>
<td>712 (86.0)</td>
<td>839 (87.3)</td>
</tr>
<tr>
<td>No</td>
<td>6 (4.5)</td>
<td>116 (14.0)</td>
<td>122 (12.70)</td>
</tr>
<tr>
<td>Missing/NA</td>
<td></td>
<td></td>
<td>718</td>
</tr>
<tr>
<td><strong>Wantedness of last child</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Then</td>
<td>97 (72.9)</td>
<td>650 (78.8)</td>
<td>747 (78.0)</td>
</tr>
<tr>
<td>Later</td>
<td>31 (23.3)</td>
<td>153 (18.5)</td>
<td>184 (19.2)</td>
</tr>
<tr>
<td>No more</td>
<td>5 (3.8)</td>
<td>22 (2.7)</td>
<td>27 (2.8)</td>
</tr>
<tr>
<td>Missing/NA</td>
<td></td>
<td></td>
<td>721</td>
</tr>
</tbody>
</table>
## Contraceptive Use/Family Planning

<table>
<thead>
<tr>
<th></th>
<th>Urban (n=340) n (%)</th>
<th>Rural (n=1339) n (%)</th>
<th>Total (n=1679) n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not using</strong></td>
<td>242 (71.2)</td>
<td>1017 (76.0)</td>
<td>1259 (75.0)</td>
</tr>
<tr>
<td>Pill</td>
<td>5 (1.5)</td>
<td>5 (0.4)</td>
<td>10 (0.6)</td>
</tr>
<tr>
<td>IUD</td>
<td>4 (1.2)</td>
<td>3 (0.2)</td>
<td>7 (0.4)</td>
</tr>
<tr>
<td>Injections</td>
<td>13 (3.8)</td>
<td>28 (2.1)</td>
<td>41 (2.4)</td>
</tr>
<tr>
<td>Diaphragm/foam/jelly</td>
<td>1 (0.3)</td>
<td>1 (0.1)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td>Condom</td>
<td>4 (1.2)</td>
<td>10 (0.7)</td>
<td>14 (0.8)</td>
</tr>
<tr>
<td>Norplant</td>
<td>2 (0.6)</td>
<td>2 (0.1)</td>
<td>4 (0.2)</td>
</tr>
<tr>
<td>Female sterilization</td>
<td>1 (0.3)</td>
<td>1 (0.1)</td>
<td>2 (0.2)</td>
</tr>
<tr>
<td><strong>Periodic abstinence</strong></td>
<td>36 (10.6)</td>
<td>39 (2.9)</td>
<td>75 (4.5)</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>1 (0.3)</td>
<td>0 (0.0)</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0.0)</td>
<td>2 (0.1)</td>
<td>2 (0.1)</td>
</tr>
<tr>
<td>Abstinence</td>
<td>31 (9.1)</td>
<td>231 (17.3)</td>
<td>262 (15.6)</td>
</tr>
</tbody>
</table>
Mean Years of Education Women 15-49

- Urban, 3.73
- Catholic, 3.1
- Savanes Total, 1.56
- Last child “wanted no more”, 0.81
- Animist, 0.75
- No Prenatal Care with first child, 0.24
- Not religious, 0.23

Mean years of education
Percentage of Modern Contraception

Modern Contraception Percentage for Ever Married women

- Urban 10.5
- Non-Gourma Togolese
- Islamic
- Radio
- Catholic
- Not Religious
- Not Togolese
- Savanes Total
- Gourma Ethnicity
- Protestant
- Rural
- No Radio
- Animist
- Last Child wanted later
- Last child wanted
- Prenatal Care with first child

No Prenatal Care, 0.8
Savanes Total 4.9
Last child “wanted no more”, 7.4
Urban 10.5
Estimated Annual Abortion Rate by Location

- **All Savanes**: 39.12
- **Urban**: 66.84
- **Rural**: 32.99
- **2008 West Africa estimate**: 28.00

*Annual abortion rate (per 1000 women)*
Estimated Annual Abortion Rate by Religion

- Traditional: 30.77
- Islamic: 53.65
- Catholic: 49.43
- Protestant: 33.72
- No religion: 39.20
- 2008 West African Estimate: 28.00

Annual Abortion Rates (per 1000 women)
Estimated Annual Abortion Rate by Ethnicity

- Gourma: 37.61
- Not Togolese: 35.98
- Togolese Not Gourma: 71.06
- 2008 West African Estimate: 28.00

Annual Abortion Rate (per 1000)
Estimated Annual Abortion Rate by Radio Ownership

- Owns a radio: 48.10
- Does not own a radio: 32.00

Annual abortion rate (per 1000 women)
Estimate Annual Abortion Rate by Wantedness of Last Child (Where the model Fails)
Estimated Annual Abortion Rate by Prenatal Care

<table>
<thead>
<tr>
<th>Prenatal care with first child</th>
<th>No prenatal care with first child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Abortion Rate (per 1000 women)</td>
<td>-9.90</td>
</tr>
</tbody>
</table>
For Comparison

(Sedgh et al., 2012; WHO, 2011)
Conclusions

- The model showed higher rates of abortion for urban women, Muslim women
- Lower rates of abortion for Protestant women than Catholic women
- Higher rates of abortion for non-Gourma Togolese women
- Higher rates of abortion for women who owned a radio (socioeconomic status proxy)
- Inconclusive information about abortion rates for women by access to prenatal care and “wantedness” of last child
- The women in the Savanes region have low levels of education
Implications

- Useful to have rough estimates of abortion rates in countries such as Togo because actual rates do not exist
- If the same methods are used in serial DHS surveys it may be possible to assess abortion rates over time
- Improvements in data collection and access to safe abortion services should decrease the need for these types of estimation methods
Limitations

- The survey was conducted 16 years ago which makes the information not as immediately relevant
- There is no “gold standard” to evaluate estimates
- Could not look at parity, educational attainment, age, or contraception use, because these variables were in the model
How does this contribute to policy?

- The estimates can be used by advocacy groups to focus attention to the problem of illegal/unsafe abortion.
- Health and government officials need these estimates to make informed decisions about policy changes and interventions.
- Changes in these estimates over time can be used to evaluate policy modifications and interventions.

(Ahman & Shah, 2007; Rossier, 2003; Singh, 2010; World Health Organization, 2012)
References


