Outline

- Motivation / research agenda
- Intervention and data sources
- Results
- Discussion / implications / conclusion
Motivation

- Does information *per se* affect [sexual] behavior?
- Or do we need incentives? (cf TZ study)
Motivation

- Does information *per se* affect [sexual] behavior?
- Or do we need incentives? (cf TZ study)
- Is access to IT sufficient to convey information?
- But what does that mean (e.g. for whom?) and how do we achieve it?
Motivation

- Does information *per se* affect [sexual] behavior?
- Or do we need incentives? (cf TZ study)
- Is access to IT sufficient to convey information?
- But what does that mean (e.g. for whom?) and how do we achieve it?
- How to ask about sensitive behaviors?
- Do risk and time preferences matter? if so, how would we know and how would we assess them?
Intervention

- SMS-searchable database with ~500 tips on sexual and reproductive health
- Users text free-form queries in English or the local language and are returned the tip whose topic matches most closely, along with further options
- For the period of the evaluation, this was free
**Intervention**

- SMS-searchable database with ~500 tips on sexual and reproductive health
- Users text free-form queries in English or the local language and are returned the tip whose topic matches most closely, along with further options
- For the period of the evaluation, this was free
- 60 trading centers were randomized into treatment and control – stratified by remoteness, network coverage, and basic demographics
Intervention Timeline

- Feb ‘09: baseline survey (n=1800)
- June ‘09: launch of service
- Aug-Oct ‘09: intensive marketing campaign in treatment areas to inform potential users about existence and mechanics of the service, visiting each community multiple times – not scalable
- Feb ‘10: endline survey (n=2400, of which 1200 were panel and 1200 were new)
Data Sources

- Baseline and endline survey
  - Eligibility: age 18-35; minimum primary education; household access to mobile phone with our partner
  - Not representative or most vulnerable, but necessary

- Usage data on the service itself and on specific tips returned, disaggregated by cell phone tower

- Monthly health clinic data on # visits for STI tests, family planning, perinatal care, etc.
Survey Data

- Demographics: gender; age; education (min P6); parents’ education; literacy; numeracy; wealth
  - Literacy: can read poster / book / given statement?
  - Numeracy: addition, subtraction, percentages
  - Wealth: fuel, toilet, # meals, # shoes, # phones
Survey Data

- Demographics: gender; age; education (min P6); parents’ education; literacy; numeracy; wealth
  - Literacy: can read poster / book / given statement?
  - Numeracy: addition, subtraction, percentages
  - Wealth: fuel, toilet, # meals, # shoes, # phones

- Qualitative and quantitative economic preferences
  - Risk and ambiguity aversion
  - Time prefs and hyperbolic discounting
  - Monetary incentives for [random] 1/2 of participants
Survey Data

- Health *knowledge* questions
  - Heard of HIV / other STIs?
  - Query various ways HIV can be transmitted
  - Contraception: condom usage, rhythm method, etc.
Survey Data

- **Health knowledge questions**
  - Heard of HIV / other STIs?
  - Query various ways HIV can be transmitted
  - Contraception: condom usage, rhythm method, etc.

- **Health attitudes questions**
  - Should a woman ask her partner to use a condom?
Survey Data

- **Health knowledge questions**
  - Heard of HIV / other STIs?
  - Query various ways HIV can be transmitted
  - Contraception: condom usage, rhythm method, etc.

- **Health attitudes questions**
  - Should a woman ask her partner to use a condom?

- **Health behavior questions**
  - Sexual history and contraception use
  - Tested for HIV? history / symptoms of any STI?
  - Visited a health facility re family planning or STIs?
Survey Data

Key outcome variables are sensitive in nature

- Have you had sex in the past year?
- How many days since the last time you had sex?
- Was last sex with a casual partner or sex worker?
- Sex with two people in one week within last 3 months?
Survey Data

- Key outcome variables are sensitive in nature
  - Have you had sex in the past year?
  - How many days since the last time you had sex?
  - Was last sex with a casual partner or sex worker?
  - Sex with two people in one week within last 3 months?

- For three in particular, we used an indirect method (on a subset) to assess fidelity of self-reports
  - Use of condom during last sex
  - Ever unfaithful within last 3 months
  - Number of partners within last 3 months
**Randomized Response Technique**

<table>
<thead>
<tr>
<th>129.</th>
<th>ONLY USE THIS IF LIST 1 = “A”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Please tell me how many of the following statements are true for you, but not which ones in particular:</td>
</tr>
<tr>
<td></td>
<td>1. Your family owns a house</td>
</tr>
<tr>
<td></td>
<td>2. Your biological father is alive</td>
</tr>
<tr>
<td></td>
<td>3. You raise goats</td>
</tr>
<tr>
<td></td>
<td>4. You really like posho</td>
</tr>
<tr>
<td></td>
<td>NUMBER OF TRUE STATEMENTS:</td>
</tr>
</tbody>
</table>

**WRITE 9 IF REFUSED TO ANSWER**

<table>
<thead>
<tr>
<th>130.</th>
<th>ONLY USE THIS IF LIST 1 = “B”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Please tell me how many of the following statements are true for you, but not which ones in particular:</td>
</tr>
<tr>
<td></td>
<td>1. Your family owns a house</td>
</tr>
<tr>
<td></td>
<td>2. Your biological father is alive</td>
</tr>
<tr>
<td></td>
<td>3. You raise goats</td>
</tr>
<tr>
<td></td>
<td>4. You really like posho</td>
</tr>
<tr>
<td></td>
<td>5. The <strong>last time</strong> you had sexual intercourse, a male condom was used.</td>
</tr>
<tr>
<td></td>
<td>NUMBER OF TRUE STATEMENTS:</td>
</tr>
</tbody>
</table>

**WRITE 9 IF REFUSED TO ANSWER**
Results: Reality check

- Balance test shows no statistically significant differences between treatment and control areas.
- Awareness of the service is twice as high (48% vs 24%) in treatment areas.
- Usage (self-reported) is 22% vs 3%.
- High variance in #queries per phone; mean = 9.
- Males use more often, but same awareness.
Results: Reality check

6001 Usage June 2009 - March 2010
Results: Topics

6001 Health Hits by Category

- Body Changes & Sexuality: 31%
- Miscellaneous: 17%
- HIV: 10%
- Family Planning: 10%
- Sexualy Transmitted Infections: 8%
- Maternal & Neonatal Health: 8%
- Malaria: 1%
- Cancer: 1%
- Herpes: 0%
- Tuberculosis: 0%
- Uncategorized: 14%
Results: Topics

Body Changes & Sexuality

- Sex (40%, 12% of total)
- Genital Organs (31%, 9% of total)
- Other (6%)
- Virginity (4%)
- Menstruation (7%)
- Myths (3%)
- Adolescence (2%)
- Erection (1%)
- Circumcision/Homosexuality (1%)
- Ejaculation (2%)
### Results: List randomization

**Used a condom the last time you had sex? (%)**

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Indirect</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>24.3</td>
<td>24.0</td>
<td>really big</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>29.6</td>
<td>22.5</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>19.4</td>
<td>25.4</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>Single</strong></td>
<td>45.5</td>
<td>32.4</td>
<td>0.01</td>
</tr>
<tr>
<td><strong>Partnered</strong></td>
<td>11.7</td>
<td>18.7</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*one-sided

NB: female results driven entirely by partnered
### Results: List randomization

**Ever unfaithful in the past three months? (%)**

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Indirect</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>13.3</td>
<td>18.9</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>19.6</td>
<td>21.9</td>
<td>big</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>7.1</td>
<td>16.3</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Male partnered</strong></td>
<td>21.1</td>
<td>20.9</td>
<td>really big</td>
</tr>
<tr>
<td><strong>Female partnered</strong></td>
<td>5.3</td>
<td>9.7</td>
<td>0.19</td>
</tr>
</tbody>
</table>

*one-sided
## Results: List randomization

Number of partners in the past three months?

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Indirect</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>1.16</td>
<td>0.73</td>
<td>0.00</td>
</tr>
<tr>
<td>Male</td>
<td>1.25</td>
<td>0.83</td>
<td>0.00</td>
</tr>
<tr>
<td>Female</td>
<td>1.08</td>
<td>0.65</td>
<td>0.00</td>
</tr>
<tr>
<td>Male single</td>
<td>1.06</td>
<td>0.55</td>
<td>0.00</td>
</tr>
<tr>
<td>Female single</td>
<td>0.84</td>
<td>0.52</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*one-sided

NB: indirect method used die roll to mask response
**Results: Knowledge**

<table>
<thead>
<tr>
<th>Treatment effects on</th>
<th>Overall</th>
<th>By Gender</th>
<th>F test</th>
<th>p</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>n</td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td><strong>A. Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Composite HIV knowledge index</td>
<td>0.0575</td>
<td>0.04</td>
<td>2,274</td>
<td>0.0347</td>
<td>0.05</td>
</tr>
<tr>
<td>2) Composite contraception knowledge index</td>
<td>0.0196</td>
<td>0.03</td>
<td>2,275</td>
<td>-0.0124</td>
<td>0.05</td>
</tr>
<tr>
<td><strong>B. Attitudes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Condoms use attitudes index</td>
<td>0.0064</td>
<td>0.04</td>
<td>2,266</td>
<td>0.0465</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>C. Behavior</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) Composite current behavior index®</td>
<td>-0.1128**</td>
<td>0.05</td>
<td>2275</td>
<td>-0.1552**</td>
<td>0.06</td>
</tr>
<tr>
<td>5) Non-Promiscuity index®</td>
<td>-0.1096**</td>
<td>0.04</td>
<td>2266</td>
<td>-0.1679***</td>
<td>0.06</td>
</tr>
<tr>
<td>6) Safe Sex behavior index®</td>
<td>-0.0521</td>
<td>0.04</td>
<td>2270</td>
<td>-0.0797</td>
<td>0.06</td>
</tr>
<tr>
<td>7) Composite outcome index</td>
<td>-0.0400</td>
<td>0.04</td>
<td>2,275</td>
<td>-0.0425</td>
<td>0.05</td>
</tr>
<tr>
<td>8) Health services index</td>
<td>-0.0210</td>
<td>0.04</td>
<td>2,275</td>
<td>-0.0369</td>
<td>0.06</td>
</tr>
<tr>
<td>9) Ever had sex in past 12 months</td>
<td>-0.0393**</td>
<td>0.02</td>
<td>2,264</td>
<td>-0.0142</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>D. Risk Perception</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10) Perceived relative nonskiness index</td>
<td>-0.1010**</td>
<td>0.04</td>
<td>2,267</td>
<td>-0.1754***</td>
<td>0.06</td>
</tr>
</tbody>
</table>
Results: Knowledge

<table>
<thead>
<tr>
<th>Treatment effects on</th>
<th>Overall</th>
<th>By Gender</th>
<th>F test: Men = Women</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$SE$</td>
<td>$n$</td>
</tr>
<tr>
<td>A. Knowledge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Composite HIV knowledge index</td>
<td>0.0575</td>
<td>0.04</td>
<td>2,274</td>
</tr>
<tr>
<td>(2) Composite contraception knowledge index</td>
<td>0.0196</td>
<td>0.03</td>
<td>2,275</td>
</tr>
<tr>
<td>B. Attitudes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Condoms use attitudes index</td>
<td>0.0064</td>
<td>0.04</td>
<td>2,266</td>
</tr>
<tr>
<td>C. Behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(4) Composite current behavior index*</td>
<td>-0.1128**</td>
<td>0.05</td>
<td>2275</td>
</tr>
<tr>
<td>(5) Non-Promiscuity index*</td>
<td>-0.1096**</td>
<td>0.04</td>
<td>2266</td>
</tr>
<tr>
<td>(6) Safe Sex behavior index*</td>
<td>-0.0521</td>
<td>0.04</td>
<td>2270</td>
</tr>
<tr>
<td>(7) Composite outcome index</td>
<td>-0.0400</td>
<td>0.04</td>
<td>2,275</td>
</tr>
<tr>
<td>(8) Health services index</td>
<td>-0.0210</td>
<td>0.04</td>
<td>2,275</td>
</tr>
<tr>
<td>(9) Ever had sex in past 12 months</td>
<td>-0.0393**</td>
<td>0.02</td>
<td>2,264</td>
</tr>
<tr>
<td>D. Risk Perception</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10) Perceived relative nonriskiness index</td>
<td>-0.1010**</td>
<td>0.04</td>
<td>2,267</td>
</tr>
</tbody>
</table>
Possible Mechanisms: Norms

- Could be that risky behavior is now seen as typical (explicitly discussed; ‘sexting’) and/or that there is more information about how to handle it
- In either case leading to a change in norms toward riskier sexual behavior
Possible Mechanisms: Norms

- Could be that risky behavior is now seen as typical (explicitly discussed; ‘sexting’) and/or that there is more information about how to handle it.
- In either case leading to a change in norms toward riskier sexual behavior.
- No evidence from difference in direct vs indirect responses using randomized techniques.
- Nor from qualitative interviews.
Possible Mechanisms: Sorting

- Alternative is that a subset (mostly women?) learned about increased risk and tried to act on it, but could not control their partners.
- Men then looked for sex outside the relationship, possibly with lower SES women not in our population.
Possible Mechanisms: Sorting

- Alternative is that a subset (mostly women?) learned about increased risk and tried to act on it, but could not control their partners.
- Men then looked for sex outside the relationship, possibly with lower SES women not in our population.
- Weakly supported by gender differences in outcomes (especially “had sex in last 12 months”).
- Also supported by qual interviews.
Policy implications

- Contra my priors, information *can* change behavior
Policy implications

- Contra my priors, information *can* change behavior
- Know your audience: tech savvy and goals
Policy implications

- Contra my priors, information can change behavior
- Know your audience: tech savvy and goals
- Human network in addition to mobile network
Policy implications

- Contra my priors, information *can* change behavior
- Know your audience: tech savvy and goals
- Human network in addition to mobile network
- This is why we do evaluations!!
Conclusion

- Can do a decent job with self-reported behavior, but it pays to be careful and even then one never knows

- Access to information via IT has a larger effect than I would have guessed, but very heterogeneous

- Only some people have desire and ability to act in response to information, or even to access it

- Some highly unintended / negative consequences

- Need guiding hand? Face-to-face interaction?
Thanks!

- Sara Lowes
- Kareem Haggag
- Selvan Kumar
- Jennifer Long
- Rebecca Furst-Nichols
- Lynn Conell-Price

- All of you...
Measuring Preferences

- Risk aversion: “Would you rather have $11 or a 50% chance of $25 [and 50% chance of $0]?”
- “I am willing to take a cab alone at night.”
Measuring Preferences

- Risk aversion: “Would you rather have $11 or a 50% chance of $25 [and 50% chance of $0]?”
- “I am willing to take a cab alone at night.”

- Time discounting: “Would you rather have $12 in cash right now – or $15 in one week?”
- “Sometimes I act spontaneously instead of thinking about the consequences of my actions.”
Measuring Preferences
Measuring Preferences
Results: preferences

- Created an index of ‘risky’ behaviors using the same outcomes as described above.
- Regressed that index on risk attitudes (qual and quant measures), as well as various controls and interaction with dummy for incentives.
- Same for patience / present bias.

- Do these ‘predict’ behavior? If so, which ones do the best job?
Results: preferences

- Short answer is that yes – they predict behavior (and in the predicted directions)
- Magnitude of coefficient is larger than that for age or wealth; smaller than for gender; similar to education
- Incentivizing the games has little effect (heresy!)
Results: preferences

- Short answer is that yes – they predict behavior (and in the predicted directions)
- Magnitude of coefficient is larger than that for age or wealth; smaller than for gender; similar to education
- Incentivizing the games has little effect (heresy!)

- Implication: preferences are important to measure! (even if only to use as a control)
- Best to use numerical games; hypothetical is okay