The Randomized Response Technique (RRT) application to the National Survey on Substance Use in General Population in Georgia 2015

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Objectives

- Prevalence of use of tobacco, alcohol and other psychoactive substances in the general population and various subgroups

- Gambling and its consequences

- Attitudes towards substance use and legislative measures
Study population

Target population:
- Any gender
- 18-64 years old at the moment of the interview
- Georgian citizen
- Ability to read and write in Georgian

Exclusion criteria:
- Under 18 and above 64 years old’
- Individuals residing in territories occupied by Russia (Abkhazia and Samachablo)
- Lessee/temporary resident, who were not the members of the selected household
- Individuals, who already took part in the survey
- Presence of mental, physical or any other kind of disability, that interfered with ability to participate in the survey independently and fully
- Institutionalized individuals (elderly homes, hospitals, penitentiary institutions);
Survey Instrument

- General physical and mental health (12 questions)
- Alcohol Use (3 questions)
- AUDIT (10 questions)
- Tobacco use, including e-cigarettes (6 questions)
- Use of psychotropic substances without doctor’s prescription (7 questions)
- Cannabis (marijuana/hashish) use (8 questions)
- Use of NPS (8 questions)
- Other illegal substances (7 questions about 12 substances): inhalants, ecstasy, LSD, cocaine, meth/amphetamine, homemade stimulants (Vint, Jeff), heroine, opium, other opiates, buprenorphine, methadone and hillarine (non existing drug)
- Gambling and gaming (9 questions)
- HIV testing; treatment experience (alcohol and other substances) (8 questions)
- Attitudes towards marijuana, injecting drug users and drug policy (6 questions)
- Demographic data (9 questions)
- RRT (6 pairs of questions)
• Data for 4,805 respondents from 3,228 households were included in the final dataset.

• The final response rate for households was 99.3% and for individual respondents was 95%.
Randomized Response Technique

- Proposed as a survey technique to reduce potential bias due to nonresponse and social desirability when asking questions about sensitive behaviors and beliefs (Warner, 1965)

- Use of randomization device (outcome unobserved by the interviewer) conceals individual responses and protects respondent privacy
Basic RRT designs with known probability

• **Mirrored Question Design** *(randomize whether or not a respondent answers the sensitive item or its inverse)*

• **Forced Response Design** *(randomization determines whether a respondent truthfully answers the sensitive question or simply replies with a forced answer, “yes” or “no”)*

• **Disguised Response Design** *(modification of Forced Response Design)*

• **Unrelated Question Design** *(randomization determines whether a respondent should answer a sensitive question or an unrelated, nonsensitive question)*

Graeme BLAIR, Kosuke IMAI, and Yang-Yang ZHOU (2015). Design and Analysis of the Randomized Response Technique
Vol. 110, No. 511, DOI: 10.1080/01621459.2015.1050028
Randomized Response Technique in Georgian GPS

• We used RRT as an additional tool to validate data collected with standard questionnaire

• Was used in a GPS and on such a big sample for the first time globally

**Critical assumption:**
(1) the randomization distribution is known and is accurate
(2) respondents comply with the instructions and answer the sensitive question truthfully
<table>
<thead>
<tr>
<th>RRT1. Have you ever taken hashish or marihuana yourself?</th>
<th>Have you completed University?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td></td>
</tr>
<tr>
<td>2 □ No</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RRT3. Have you ever taken new synthetic drugs yourself?</th>
<th>Where are you insured by state health care universal insurance last year?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td>2 □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RRT4. Have you ever taken home-made stimulants yourself?</th>
<th>Are you employed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td>2 □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RRT5. Have you ever taken heroin yourself?</th>
<th>Are you smoker?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td>2 □ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RRT6. Have you ever taken Subutex yourself?</th>
<th>Did you get new ID card last year?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td>2 □ No</td>
</tr>
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</table>

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<tr>
<th>RRT7. Have you ever taken Krakadil yourself?</th>
<th>Did you get new passport last year?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 □ Yes</td>
<td>2 □ No</td>
</tr>
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RRT application to cannabis use

- **RRT1**: Have you ever used hashish or marijuana?

- 4,758 responses (47 missing), 1,806 “yes”

- Our estimate: 4,758 / 2 = 2,379 answered question about education

- 46% of this answers belongs to the question about education (2,379 * 46% = 1,094)

- After calculation, we have 712 “yes” answers to marijuana consumption (1,806 - 1,094 = 712)
  
  \[
  \frac{712}{2,379} = 29.9\%
  \]

- RRT result: lifetime prevalence of marijuana use is around 30%, which is almost twice as much compared to the results gathered with the standard questionnaire – 15.9%
## RRT Results

<table>
<thead>
<tr>
<th>Substance</th>
<th>Standard Questionnaire %</th>
<th>RRT %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana (LTP)</td>
<td>15.9</td>
<td>29.9</td>
</tr>
<tr>
<td>Heroine (LTP)</td>
<td>0.7</td>
<td>9</td>
</tr>
<tr>
<td>Homemade Stimulants (LTP)</td>
<td>0.5</td>
<td>2</td>
</tr>
<tr>
<td>Buprenorphine (LTP)</td>
<td>0.9</td>
<td>3</td>
</tr>
<tr>
<td>NPS (LTP)</td>
<td>1.5</td>
<td>7.3</td>
</tr>
</tbody>
</table>
Conclusions

• Without exception, the GPS+RRT approach produced estimates that were larger than corresponding estimates from the standard GPS approach, or produced estimates when the standard GPS approach did not yield a usable estimate other than a working approximation.

• We suggest that the RRT approach to the GPS context should be refined and improved upon, and might become a useful adjunct to the now-standard GPS methods.
Thank you!

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