Address-Based Sampling and the National Survey on Drug Use and Health: Evaluating the Effects of Coverage Bias

Katherine Morton (RTI), Joseph McMichael (RTI), Jamie Ridenhour (RTI), Jonaki Bose (SAMHSA)

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Overview

1. NSDUH Background
2. Motivation for Address-Based Sampling (ABS)
3. Mailing List Field Study Overview
4. Methods
5. Results
6. Conclusions
NSDUH Background

• The National Survey on Drug Use and Health (NSDUH) provides national, state and substate data on substance use and mental health in the civilian, noninstitutionalized population age 12 and older
• Conducted by RTI under contract with SAMHSA
NSDUH Background (cont’d)

• Data are collected on a quarterly basis each year
• Approximately 700 Field Interviewers (FIs) staffed
• Approximately 180,000 household screenings and 67,500 interviews completed annually
• Field enumeration used to obtain lists of dwelling units within sampled areas
NSDUH Field Enumeration

- Map production begins more than one year in advance of the survey year
- Field enumeration occurs from April through November of the year preceding the survey
- Approximately 370 field “listers” staffed each year
Motivation for Moving to Address-Based Sampling (ABS)

- Less costly
- More timely
- Larger cluster sizes and reduced intracluster correlation
ABS Coverage

- Known undercoverage of certain populations:
  - Group quarters
  - Rural areas

- Methods for improving ABS coverage:
  - Frame supplementation using the Check for Housing Units Missed (CHUM) procedure
  - FE/ABS hybrid approach
NSDUH Mailing List Field Study (MLFS)

- 200 segments from Quarter 1 of the 2009 NSDUH
- 3,878 screened and eligible sample dwelling units (SDUs)
- 1,725 completed interviews
NSDUH Mailing List Field Study (MLFS) (cont’d)

• Matched addresses of eligible SDUs obtained from the NSDUH screening to a list of mailing addresses purchased from a commercial vendor

• SDUs whose mailing address did not initially match to the ABS list were followed up with a telephone or field check to verify or correct the mailing address of the SDU

• Determined if the SDU could be picked up by the Check for Housing Units Missed (CHUM) procedure
Coverage Bias Analysis Methods

- Identification of persons covered by the ABS frame and CHUM procedure
- Poststratification of weights to populations of interest:
  - Age (12-17, 18-25, 26-34, 35-49, 50+)
  - Race (Hispanic or Latino, Not Hispanic or Latina White, Not Hispanic or Latino Black or African American, Not Hispanic or Latino Other)
  - Gender
  - Urban/Rural
- Comparison of basic demographics and several drug use and mental health measures for respondents covered by the FE frame to those covered by the ABS frame
Frame Coverage

<table>
<thead>
<tr>
<th></th>
<th>FE + HOI</th>
<th>ABS + CHUM</th>
<th>ABS Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible DUs</td>
<td>3,878</td>
<td>3,728</td>
<td>3,229</td>
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<tr>
<td>Interviews</td>
<td>1,725</td>
<td>1,650</td>
<td>1,402</td>
</tr>
</tbody>
</table>

*FE=Field Enumeration; HOI=Half-Open Interval; ABS=Address-Based Sampling
Detectable Difference in Estimates With At Least 80 Percent Power and a Significance Level of 10 Percent, Assuming 200 Segments and 1,725 Persons

<table>
<thead>
<tr>
<th>Assumed Coverage Rate</th>
<th>True Value over All Dwelling Units</th>
<th>Detectable Change in Estimate for Omitting Noncovered Dwelling Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.95</td>
<td>0.01</td>
<td>0.0019</td>
</tr>
<tr>
<td>0.95</td>
<td>0.02</td>
<td>0.0024</td>
</tr>
<tr>
<td>0.95</td>
<td>0.08</td>
<td>0.0042</td>
</tr>
<tr>
<td>0.95</td>
<td>0.25</td>
<td>0.0062</td>
</tr>
<tr>
<td>0.95</td>
<td>0.50</td>
<td>0.0068</td>
</tr>
<tr>
<td>0.90</td>
<td>0.01</td>
<td>0.0025</td>
</tr>
<tr>
<td>0.90</td>
<td>0.02</td>
<td>0.0033</td>
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<td>0.90</td>
<td>0.25</td>
<td>0.0089</td>
</tr>
<tr>
<td>0.90</td>
<td>0.50</td>
<td>0.0100</td>
</tr>
</tbody>
</table>
Comparison of FE and ABS Frames

• Demographic Variables
  – Education (Age 18+): Less than HS, HS Grad, Some College, College Grad
  – Total Family Income: Less than $20,000, $20,000 - $49,999, $50,000 - $74,999, $75,000 or more
  – Percent of Federal Poverty Threshold: Less than 100%, 100-199%, 200% or more

• Drug Measures
  – Past Month Use: Cigarettes, Alcohol, Illicit Drugs, Illicit Drugs Other Than Marijuana, Cocaine
  – Past Year Dependence: Illicit Drugs, Alcohol
  – Past Year Treatment: Illicit Drugs, Alcohol
Comparison of FE and ABS Frames (cont’d)

• Mental Health Measures (Age 18+)
  – Past Year Serious Psychological Distress
  – Past Year Major Depressive Episode

• Other Variables
  – Group Quarter
  – Percent Owner-Occupied: 50% or more, 10 - <50%, Less than 10%
  – CBSA
  – Region: Northeast, North Central, South, West
Comparison of FE and ABS Frames: Significant Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Difference (FE-ABS)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Graduate</td>
<td>-0.0041</td>
<td>0.0210</td>
</tr>
<tr>
<td>Family Income Less than $20,000</td>
<td>0.0065</td>
<td>0.0756</td>
</tr>
<tr>
<td>Percent of Federal Poverty Threshold:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-199%</td>
<td>0.0068</td>
<td>0.0962</td>
</tr>
<tr>
<td>200% or more</td>
<td>-0.0083</td>
<td>0.0346</td>
</tr>
<tr>
<td>Past Year Treatment for Illicit Drugs</td>
<td>-0.0001</td>
<td>0.0507</td>
</tr>
<tr>
<td>Group Quarter</td>
<td>0.0009</td>
<td>0.0330</td>
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</table>

*21 comparisons not significant; 4 with insufficient sample
Conclusions

• Very small differences in prevalence estimates between the FE frame and the ABS frame
• Because the estimates based on the FE frame and the estimates based on the ABS frame share a large portion of their cases, these comparisons have the statistical power to declare very small differences in the overall prevalence estimates statistically significant (e.g., 0.002)
• Hybrid (FE/ABS) frames would have even less coverage bias
Thank You!

Katie Morton

bowman@rti.org

http://www.rti.org/jsm