Venue-Based and On-line Sampling

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"In much of the world, [men who have sex with men] remain hidden, stigmatised, susceptible to blackmail if they disclose their sexual lives, and criminalised, even in health-care facilities.... To address HIV in [these men] will take continued research, political will, structural reform, community engagement, and strategic planning and programming, but it can and must be done."

GAY AND BISEXUAL MEN MAKE UP 2% OF THE U.S. POPULATION BUT ACCOUNTED FOR 67% OF ALL NEW HIV DIAGNOSES IN THE U.S. IN 2015
BLACK AND HISPANIC/LATINO MEN ACCOUNTED FOR TWO-THIRDS OF ALL GAY AND BISEXUAL MEN NEWLY DIAGNOSED WITH HIV IN 2015
Diagnoses of HIV Infection among Men Who Have Sex with Men, by Age at Diagnosis, 2010–2015—United States and 6 Dependent Areas

Note: Data have been statistically adjusted to account for missing transmission category. Data on men who have sex with men do not include men with HIV infection attributed to male-to-male sexual contact and injection drug use.
How to sample MSM for HIV prevention research?

• Venue-based sampling
• Online sampling – General social media
• Virtual venues (sex-seeking apps)
Surveillance of HIV Risk and Prevention Behaviors of Men Who Have Sex with Men—A National Application of Venue-Based, Time-Space Sampling

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SYNOPSIS

In collaboration with the Centers for Disease Control and Prevention, participating state and local health departments, universities, and community-based organizations applied venue-based, time-space sampling methods for the first wave of National HIV Behavioral Surveillance of men who have sex with men (NHBS-MSM). Conducted in 17 metropolitan areas in the United States and Puerto Rico from November 2003 through April 2005, NHBS-MSM methods included: (1) formative research to learn the venues, times, and methods to recruit MSM; (2) monthly sampling frames of eligible venues and day-time...
Venue Based Sampling

• Formative work – venue enumeration
• Observations
• Development of venue-day-time periods
• Construction of sampling frame of VDTs
• Development of sampling calendar
• Selection of sample
• Within venues: systematic, flow-based sampling
Figure 2. Hypothetical sampling calendar for venue-based, time-space sampling of MSM

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A2c: X021</td>
<td></td>
<td></td>
<td>A1: S033</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PR: Z001 8p–12a</td>
<td>PR: F001 6p–10p</td>
<td>PR: X002 8p–12a</td>
<td>PR: D052 8p–12a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>PR: R045 6p–10p</td>
<td></td>
<td>PR: C019 10p–12a</td>
<td>PR: C001 8p–12a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>PR: S033 12a–2a</td>
<td>PR: S001 6p–10p</td>
<td>PR: X021 6p–10p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>PR: P007 4p–6p</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A1: X021 A2: C019</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>


Where the boys are ...

Using a Geolocation Social Networking Application to Calculate the Population Density of Sex-Seeking Gay Men for Research and Prevention Services

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Source: J Med Internet Res 2014;16(11):e249
Figure 4. Map of Atlanta showing 79 data collection points from profiles on a sex-seeking networking app; radii of yellow circles represent distance to user sample at the maximum distance from the sample point, and overlapping circles completely cover Atlanta, with smaller circular areas used for data collection where there were the largest numbers of application users.
VBS: Place matters

Figure 6. Estimated density of white (A) and black (B) social network application users in Atlanta (gray outline), showing major highways (black lines) and roads (dark red lines) and highlighting the “Midtown” area of Atlanta (yellow rectangle); kernel densities estimated from sample data standardized to 1-mile circular radii and smoothed to 2 miles using a Gaussian smoother that concentrates the majority of the density at the sample point and averages over all adjacent data points within the smoothing radius.

Original Paper

Bias in Online Recruitment and Retention of Racial and Ethnic Minority Men Who Have Sex With Men

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Online studies undersample Black and Hispanic MSM

<table>
<thead>
<tr>
<th>Internet Study</th>
<th>Location</th>
<th>Black Men</th>
<th>Hispanic Men</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Population Prevalence (%)</td>
<td>Enrolled Prevalence (%)</td>
<td>Prevalence Ratio</td>
</tr>
<tr>
<td>Grosskopf et al, 2010 [12]</td>
<td>New York City</td>
<td>25.1</td>
<td>17.9</td>
<td>0.71</td>
</tr>
<tr>
<td>Chiasson et al, 2009 [11]</td>
<td>United States</td>
<td>12.4</td>
<td>6.3</td>
<td>0.51</td>
</tr>
<tr>
<td>Rosser et al, 2009a [13]</td>
<td>United States</td>
<td>12.4</td>
<td>16.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Berg et al, 2007 [14]</td>
<td>United States</td>
<td>12.4</td>
<td>2.5</td>
<td>0.20</td>
</tr>
<tr>
<td>Mackellar et al, 2007b [15]</td>
<td>6 US cities</td>
<td>25.3</td>
<td>8.6</td>
<td>0.34</td>
</tr>
<tr>
<td>Chiasson et al, 2007 [16]</td>
<td>United States and Canada</td>
<td>11.3</td>
<td>4.6</td>
<td>0.41</td>
</tr>
<tr>
<td>Bull et al, 2004c [17]</td>
<td>United States</td>
<td>12.4</td>
<td>6.6</td>
<td>0.53</td>
</tr>
<tr>
<td>Hirshfield et al, 2004 [18]</td>
<td>United States</td>
<td>12.4</td>
<td>2.0</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Figure 1. Shown are six banner advertisements displaying white (left), black (middle), and Asian (right) models used to recruit potential participants from MySpace.com for an online HIV behavioral risk study in the United States in 2009.

Table 2. Odds of clicking on study banner advertisements by MySpace.com users controlling for self-reported education, sexual identity, and race of model in advertisements and stratified by race of the MySpace.com user in the United States in 2009

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>White Men</th>
<th>Black Men</th>
<th>Hispanic Men</th>
<th>Other Men</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adjusted OR</td>
<td>Adjusted OR</td>
<td>Adjusted OR</td>
<td>Adjusted OR</td>
</tr>
<tr>
<td></td>
<td>(95% CI)</td>
<td>(95% CI)</td>
<td>(95% CI)</td>
<td>(95% CI)</td>
</tr>
</tbody>
</table>

**Education**

- < High School (referent)
- > High School: 0.99 (0.95 - 1.04)
- 1.20 (1.14 - 1.26) *<sup>a</sup>
- 1.05 (1.01 - 1.10)
- 1.10 (1.04 - 1.16)

**Identity**

- Unsure (referent)
- Gay: 2.10 (1.98 - 2.24)
- 1.62 (1.53 - 1.71)
- 1.45 (1.38 - 1.52)
- 3.07 (2.88 - 3.28)
- Bisexual: 1.63 (1.53 - 1.74)
- 1.78 (1.67 - 1.89)
- 1.58 (1.49 - 1.67)
- 2.83 (2.63 - 3.04)

**Race of model**

- White (referent)
- Black: 0.74 (0.70 - 0.79)
- 1.83 (1.72 - 1.95)
- 1.05 (0.99 - 1.11)
- 0.95 (0.89 - 1.00)
- Asian: 1.56 (1.47 - 1.64)
- 1.46 (1.37 - 1.56)
- 1.70 (1.62 - 1.79)
- 1.61 (1.52 - 1.69)

*<sup>a</sup>Results presented in italics denote significance at P < .05.
Figure 3. Retention in an online behavioral risk survey among participants reporting only male partners in the past 12 months, by race/ethnicity of the participants in the United States in 2009.

American Men's Internet Survey

4
Annual Data Collection Cycles to Date

10k+
Surveys completed per year

52
States & Territories Represented

http://emoryamis.org/
Source of recruitment for MSM recruited through general social networking, general gay interest, gay social networking, and sex-seeking apps, AMIS, 2012-2016

Characteristics of MSM recruited through general social networking, general gay interest, gay social networking, and sex-seeking apps, 2016

![Bar chart showing characteristics of MSM recruited through different methods.]

- **HIV test, p12 m**
- **STI test, p12 m**
- **HIV+**
- **CAI**
- **Marijuana**

**N = 10,217**

Proportion of HIV-negative or unknown status AMIS participants reporting any HIV testing, in the past 12 months, by AMIS cycle and residence (United States and NHBS cities). Estimated annual percentage change (EAPC) and 95% confidence intervals (95% CI) presented.
How to men recruited through Facebook, versus those recruited through VBS, differ in terms of STI and HIV prevalence, retention, and risk behaviors?

Risk and testing behaviors among Facebook versus VBS recruited, Atlanta, 2011-2014

<table>
<thead>
<tr>
<th>FB &lt; VBS</th>
<th>FB = VBS</th>
<th>FB &gt; VBS</th>
</tr>
</thead>
<tbody>
<tr>
<td># male partners</td>
<td>HIV+</td>
<td>--</td>
</tr>
<tr>
<td>Condomless sex partners</td>
<td>Rectal STI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Syphilis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Main partners</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Casual partners</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV testing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retention</td>
<td></td>
</tr>
</tbody>
</table>

Summary

- MSM constitute the major risk group in the US HIV epidemic
- Black MSM, Hispanic MSM and young MSM are disproportionately impacted by HIV
- Historically MSM have been recruited through venues associated with risk (bars, clubs)
- Venue-based sampling is a systematic approach to sampling MSM
- Online sampling can access Black and Hispanic MSM, but are generally underrecruited.
- Race-concordant ads may increase recruitment efficiency for online recruitment for Black MSM
- Black MSM are more prone to loss to follow up within surveys and in prospective studies
- Online-recruited and venue-recruited samples of MSM can be combined
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