Classes and Correlates of HIV Risk among those seeking sexual health services in Miami-Dade County: A Latent Class Analysis

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Context

• In South Florida rates of new HIV infections are particularly high
• PrEP use has not scaled proportionately to need
• Many potential PrEP candidates may not be aware of how to access PrEP or have barriers to obtaining PrEP
• University of Miami PrEP program conceived and implemented a mobile prevention clinic providing HIV and sexually transmitted infection (STI) testing and treatment as well as PrEP care
LCA Research Aims

• AIM 1: Characterize distinct patterns of HIV risk using latent class analysis

• AIM 2: Examine correlates of latent class membership
Sample

• We applied Latent Class Analysis (LCA) to a sample of 2036 individuals who sought sexual health services through the University of Miami PrEP programs between September 2018 and March 2023
• Mean participant age was 37.2 years (SD = 12.5)
• Participants were
  • Predominantly male sex assigned at birth (70.4%)
  • White (56%)
  • Hispanic (62.7%)
  • Foreign born (54.7%)
Methods/Analysis

• Latent Class Analysis
  • Used to identify underlying patterns of covariance in the data structure to identify classes or sub-groups

• Correlates
  • Descriptive mean and standard deviations of theoretical and empirical correlates of HIV risk behaviors
  • ANOVA and Chi Square analysis to determine significant associations and differences
LCA Model

- HIV Risk Classes were identified using:
  - history of bacterial sexually transmitted infection (STI) (yes/no)
  - history of transactional sex (yes/no)
  - history of anonymous sex (yes/no)
  - history of sex with an HIV positive sexual partner (yes/no)
  - history of sex with a person who injects drugs (yes/no)
  - history of use of injection drugs (yes/no)
  - history of condomless sex (yes/no)
- The timeframe for all measures was past 12 months
Correlates

• Age
• Gender (Male vs. Female vs. Transgender/Gender non-conforming)
• Race (White vs. Black/African American vs. Other vs. Asian)
• Ethnicity (Hispanic/Latino vs. Non-Hispanic/Non-Latino)
• Country of birth (Born in U.S vs. Not born in U.S)
• Type of service sought (PrEP services vs. Other services)
• Self-reported chances of getting HIV (None vs. Low vs. Moderate vs. High)
# Results - Model Fit

<table>
<thead>
<tr>
<th>Model Fit</th>
<th>2 Classes</th>
<th>3 Classes</th>
<th>4 Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIC</td>
<td>8102.898</td>
<td>8042.515</td>
<td>8032.194</td>
</tr>
<tr>
<td>BIC</td>
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<td>8179.967</td>
<td>8151.977</td>
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<tr>
<td>ABIC</td>
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<td>8094.19</td>
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</tr>
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Results

Identified HIV Risk Classes

- Acute Bacterial STI: Yes
- IDU: Yes
- Sex Without Condoms: Yes
- Sex with IDU: Yes
- Sex with HIV Positive: Yes
- Sex for Goods/Services: Yes
- Anonymous Partner: Yes
- Share IDU Equipment: Yes

Class 1
Class 2
Class 3
Class 4
Results

Chart Title

- IDU: Yes
- Acute Bacterial STI: Yes
- Sex Without Condoms: Yes
- Sex with IDU: Yes
- Sex with HIV Positive: Yes
- Sex for Goods/Services: Yes
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- Share IDU Equipment: Yes

Legend:
- Class 1
- Class 2
- Class 3
- Class 4
Class 1:

Class 1 - Low Risk

- Characterized by lowest overall reported probability of positively responding to any of the risk variables (0 -0.42)
- Highest percentage of persons who were foreign born (69.5%)
- Highest percentage of those who identify as Male (87.6%)
Class 2:

Class 2 - Moderate Risk

• Characterized by:
  • High reported history of STI
  • High reported sex without condoms
  • High reported sex for goods/services (transactional sex)
  • High reported anonymous sex
  • Highest percentage of persons who came for PrEP services (85.0%)
  • Highest percentage of those who self-reported their HIV risk as high (18.8%)
Class 3:

- Characterized by:
  - High reported condomless sex
  - Moderately high reported anonymous sex
- Highest percentage of those who identify as Female (31.4%)
- Highest percentage of those who self-reported race as Black/African American (32.3%)
- Highest percentage of those born in the U.S (48.0%)
- Highest percentage who came for services other than PrEP (59.5%)
Class 4:

Class 4- Higher Risk

• Characterized by:
  • Higher reported risk among all risk factor questions
  • Highest percentage of those born outside of the U.S (69.5%)
  • Highest percentage of those who self-reported their HIV risk as low (44.6%)
<table>
<thead>
<tr>
<th></th>
<th>Class 1 (N=420)</th>
<th>Class 2 (N=160)</th>
<th>Class 3 (N=1243)</th>
<th>Class 4 (N=213)</th>
<th>Overall (N=2036)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>37.3 (10.3)</td>
<td>38.7 (10.7)</td>
<td>38.1 (13.5)</td>
<td>31.1 (9.19)</td>
<td>37.2 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Median [Min, Max]</td>
<td>35.0 [2.00, 76.0]</td>
<td>36.0 [19.0, 81.0]</td>
<td>35.0 [0, 122]</td>
<td>30.0 [0, 54.0]</td>
<td>35.0 [0, 122]</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td><strong>Baseline Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Female or Woman</td>
<td>41 (9.8%)</td>
<td>24 (15.0%)</td>
<td>390 (31.4%)</td>
<td>28 (13.1%)</td>
<td>483 (23.7%)</td>
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</tr>
<tr>
<td>Male or Man</td>
<td>368 (87.6%)</td>
<td>129 (80.6%)</td>
<td>765 (61.5%)</td>
<td>172 (80.8%)</td>
<td>1434 (70.4%)</td>
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</tr>
<tr>
<td>Transgender, Gender Non-conforming</td>
<td>11 (2.6%)</td>
<td>7 (4.4%)</td>
<td>88 (7.1%)</td>
<td>13 (6.1%)</td>
<td>119 (5.8%)</td>
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<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>White</td>
<td>310 (73.8%)</td>
<td>111 (69.4%)</td>
<td>597 (48.0%)</td>
<td>122 (57.3%)</td>
<td>1140 (56.0%)</td>
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<tr>
<td>Black/ African American</td>
<td>58 (13.8%)</td>
<td>28 (17.5%)</td>
<td>402 (32.3%)</td>
<td>27 (12.7%)</td>
<td>515 (25.3%)</td>
<td></td>
</tr>
<tr>
<td>More than One Race/ Other</td>
<td>44 (10.4%)</td>
<td>16 (10.0%)</td>
<td>199 (16.0%)</td>
<td>57 (20.7%)</td>
<td>316 (15.5%)</td>
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</tr>
<tr>
<td>Asian</td>
<td>8 (1.9%)</td>
<td>5 (3.1%)</td>
<td>45 (3.6%)</td>
<td>7 (3.3%)</td>
<td>65 (3.2%)</td>
<td></td>
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<tr>
<td>Identifies as Hispanic/Latinx</td>
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<td></td>
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<td>&lt;0.01</td>
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<tr>
<td>Yes</td>
<td>306 (72.9%)</td>
<td>104 (65.0%)</td>
<td>721 (58.0%)</td>
<td>145 (68.1%)</td>
<td>1276 (62.7%)</td>
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<tr>
<td>No</td>
<td>111 (26.4%)</td>
<td>56 (35.0%)</td>
<td>491 (39.5%)</td>
<td>62 (29.1%)</td>
<td>720 (35.4%)</td>
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</tr>
<tr>
<td>Prefer Not to Answer</td>
<td>3 (0.7%)</td>
<td>0 (0%)</td>
<td>31 (2.4%)</td>
<td>6 (2.8%)</td>
<td>40 (2.0%)</td>
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<tr>
<td><strong>Born in the U.S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>&lt;0.01</td>
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<tr>
<td>Yes</td>
<td>150 (35.7%)</td>
<td>63 (39.4%)</td>
<td>597 (48.0%)</td>
<td>63 (29.6%)</td>
<td>873 (42.9%)</td>
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</tr>
<tr>
<td>No</td>
<td>260 (61.9%)</td>
<td>95 (59.4%)</td>
<td>611 (49.2%)</td>
<td>148 (69.5%)</td>
<td>1114 (54.7%)</td>
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<tr>
<td>Prefer Not to Answer</td>
<td>10 (2.4%)</td>
<td>2 (1.3%)</td>
<td>35 (2.8%)</td>
<td>2 (1.0%)</td>
<td>49 (2.4%)</td>
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<tr>
<td><strong>Type of Service</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
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<tr>
<td>Came for Other Services</td>
<td>76 (18.1%)</td>
<td>24 (15.0%)</td>
<td>739 (59.5%)</td>
<td>58 (27.2%)</td>
<td>897 (44.1%)</td>
<td></td>
</tr>
<tr>
<td>Came for PrEP Services</td>
<td>344 (81.9%)</td>
<td>136 (85.0%)</td>
<td>504 (40.5%)</td>
<td>155 (72.8%)</td>
<td>1139 (55.9%)</td>
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<tr>
<td><strong>You Think Your Chances of Getting Infected with HIV Are:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>None</td>
<td>43 (10.2%)</td>
<td>11 (6.9%)</td>
<td>247 (19.9%)</td>
<td>31 (14.6%)</td>
<td>332 (16.3%)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>183 (43.6%)</td>
<td>53 (33.1%)</td>
<td>431 (34.7%)</td>
<td>95 (44.6%)</td>
<td>762 (37.4%)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>94 (22.4%)</td>
<td>50 (31.3%)</td>
<td>166 (13.4%)</td>
<td>58 (27.2%)</td>
<td>368 (18.1%)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>46 (11.0%)</td>
<td>30 (18.8%)</td>
<td>69 (5.6%)</td>
<td>23 (10.8%)</td>
<td>168 (8.3%)</td>
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<tr>
<td>Missing</td>
<td>54 (12.9%)</td>
<td>16 (10.0%)</td>
<td>330 (26.5%)</td>
<td>6 (2.8%)</td>
<td>406 (19.9%)</td>
<td></td>
</tr>
</tbody>
</table>
Discussion:

- Our analysis found low risk perception among those in the highest HIV risk class.
- History of an STI was important to risk stratification between class 1 and 3 (low risk and low/moderate risk).
  - These groups differed by gender and type of services sought.
- Interventions are needed to focus on addressing HIV risk perception.
- Identifying those with a recent STI may help to focus prevention efforts.