Increasing Access to Community-Based Methadone Assisted Treatment in Philadelphia

By: Kelly Boettcher, Manasvi Shah, Luise Weber
Overview of the Opioid Epidemic
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Analysis: Context & Methodology
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Implications
In 2015, opioids (prescription and heroin) killed more than 33,000 people nationally, with almost half of all opioid overdose deaths involving a prescription opioid.
From 2014 to 2015, heroin overdose death rates increased by nearly 21%.
Philadelphia’s rate of overdose deaths is higher than other metropolitan cities, with 907 deaths in 2016; over 200 more than in 2015.
The Opioid Epidemic

Primary Drug of Choice Identified at Treatment Admission, 2006-2016

- Heroin
- Alcohol
- Cocaine: Crack
- Marijuana
Community Behavioral Health (CBH)

Is a behavioral health managed care organization (MCO) serving all Medicaid-eligible individuals in Philadelphia.

DBHIDS
DEPARTMENT of BEHAVIORAL HEALTH
and INTELLECTUAL disABILITY SERVICES
CBH has taken many steps towards combating this epidemic by seeking to increase the capacity of treatment providers in our network and providing multi-pronged trainings for both community members and health professionals.
CBH is contractually required to measure network access.

Network access requires that at least 90% of the members are within 30 minutes of a treatment provider.
Analysis: Context
Provider network assessment in 2010 using the ArcGIS Network Analyst tool, provided visualization of members receiving treatment in relation to the nearest provider.
The analysis found that 12.4% of our members were traveling greater than 30 minutes to the nearest provider.
The analysis identified a need for methadone assisted treatment providers in Northeast Philadelphia.
Based on the results, two providers opened in the Northeast in an effort to increase the service area and decrease travel time.
As a part of our network assessment this year, we repeated the analysis using 2016 service use data.
**Aim:** to see if travel time for members in the Northeast decreased with addition of two providers in the network.
Methodology

CBH data: demographics, member and provider address

While Philadelphia has open data source for GIS layers, for our analysis, CBH is directly linked to the City server for GIS data.
Initial Analysis (2010)

- Calculated travel time to nearest service provider.
- Uniform Drive speed: 6 miles/hr.
- Walk speed: 3 miles/hr.
- It overestimates travel time especially for long distances, in-spite of accounting for peak traffic and parking time.

www.youtube.com/embed/h9037p_BFY?wmode=opaque&rel=0
Calculates travel time to provider of choice. This includes travel time by driving as well as public transit.

The analysis takes speed by each unique road class category.
Current Analysis (2017)

However:

• Our initial speeds was the maximum speed limit across the different road classes.
• No traffic data.

• www.youtube.com/embed/yB3dnNyWkTs?wmode=opaque&rel=0
## Current Analysis [2017]

<table>
<thead>
<tr>
<th>Features of a Network Dataset (Driving)</th>
<th>Features in built Network Dataset for Analysis (Driving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>✓ average speed for each road class</td>
</tr>
<tr>
<td>One-ways</td>
<td>✓ yes</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>✓ yes</td>
</tr>
<tr>
<td>Traffic</td>
<td>No</td>
</tr>
<tr>
<td>Elevation</td>
<td>No</td>
</tr>
<tr>
<td>Turns</td>
<td>Not restricted turns but</td>
</tr>
<tr>
<td></td>
<td>✓ global turns dataset with default impedance</td>
</tr>
<tr>
<td>Additional</td>
<td>5 sec impedance at junctions</td>
</tr>
</tbody>
</table>

Average speed for each road class available from city.
Test Data set: Shows we are hitting the minimum drive time without traffic.

<table>
<thead>
<tr>
<th>Route</th>
<th>Distance (in miles)</th>
<th>Time Traveled (in minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Google</td>
<td>ArcGIS</td>
</tr>
<tr>
<td>1</td>
<td>2.7</td>
<td>2.5</td>
</tr>
<tr>
<td>2</td>
<td>17.6</td>
<td>17.2</td>
</tr>
<tr>
<td>3</td>
<td>0.6</td>
<td>0.55</td>
</tr>
<tr>
<td>4</td>
<td>1.3</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Results
Drive Time Distribution to MAT providers.

- Greater than 30 mins: 1.08% (CY:2016), 1.92% (CY:2009)
- 25 - 30 mins: 3.62% (CY:2016), 4.46% (CY:2009)
- 20 - 25 mins: 11.41% (CY:2016), 14.28% (CY:2009)
- 10 - 20 mins: 49.02% (CY:2016), 49.42% (CY:2009)
- Less than 10 mins: 34.88% (CY:2016), 30.10% (CY:2009)
Average drive time for northeast decreases in 2016.
Travel to MAT providers, Drive Time Greater than 25 minutes

2009, [n=267]

2016, [n=266]
Philadelphia is a diverse city; however, neighborhood-level diversity tends to be low.
Results Summary

- Current analysis results showed an increased network capacity and decreased travel time to the nearest provider in the Northeast.

- Travel times, however, did not decrease as significantly when considering member choice in addition to proximity. Interestingly, member choice plays a greater role than expected.

- Other factors under consideration include social stigma, provider relationships, and treatment quality.
Implications for Network Development

- Generally, network expansion has focused on geographic gaps
  - Additional considerations should be taken to best address member needs, e.g., public transit availability, parking, neighborhood characteristics, etc.

- CBH is incorporating these practices as it continues to transform to a population health approach that promotes health & wellness for individuals, families, and communities based on data-informed decision making.
Next Steps:
Public Transit
FIGURE 17: HOUSEHOLD VEHICLES AVAILABLE BY AREA

<table>
<thead>
<tr>
<th>Area</th>
<th>No Vehicle</th>
<th>One Vehicle</th>
<th>Two or More Vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIVERSITY CITY</td>
<td>59%</td>
<td>31%</td>
<td>10%</td>
</tr>
<tr>
<td>NORTH PHILADELPHIA</td>
<td>53%</td>
<td>35%</td>
<td>12%</td>
</tr>
<tr>
<td>GREATER CENTER CITY</td>
<td>41%</td>
<td>45%</td>
<td>12%</td>
</tr>
<tr>
<td>SOUTHWEST PHILADELPHIA</td>
<td>40%</td>
<td>44%</td>
<td>16%</td>
</tr>
<tr>
<td>WEST PHILADELPHIA</td>
<td>39%</td>
<td>44%</td>
<td>17%</td>
</tr>
<tr>
<td>BRIDESBERG/KENSINGTON</td>
<td>36%</td>
<td>44%</td>
<td>20%</td>
</tr>
<tr>
<td>PHILADELPHIA AVERAGE</td>
<td>33%</td>
<td>43%</td>
<td>24%</td>
</tr>
<tr>
<td>SOUTH PHILADELPHIA</td>
<td>33%</td>
<td>46%</td>
<td>21%</td>
</tr>
<tr>
<td>OLNEY/OLMSTEAD</td>
<td>31%</td>
<td>43%</td>
<td>26%</td>
</tr>
<tr>
<td>GERMANTOWN/CHESTNUT HILL</td>
<td>29%</td>
<td>44%</td>
<td>27%</td>
</tr>
<tr>
<td>NEAR NORTHEAST</td>
<td>17%</td>
<td>47%</td>
<td>36%</td>
</tr>
<tr>
<td>FAR NORTHEAST</td>
<td>12%</td>
<td>45%</td>
<td>44%</td>
</tr>
<tr>
<td>ROXBOROUGH/MANAYUNK</td>
<td>10%</td>
<td>44%</td>
<td>46%</td>
</tr>
<tr>
<td>SUBURBAN AVERAGE</td>
<td>7%</td>
<td>32%</td>
<td>61%</td>
</tr>
</tbody>
</table>

Source: US Census Bureau, American Community Survey 2014 1-Year Estimates
This is a picture showing a Network Dataset built for travel time analysis along public transit system of Philadelphia - SEPTA. It includes bus, light rail and trolley.
The green dots indicate transit stops and the blue lines represent transit routes.

The transit routes, schedules, etc information was obtained from SEPTA GTFS data download.
This Transit Network Dataset was built using the "Add GTFS to Network Dataset tool" created by Melinda Morang and Patrick Stevens, Esri.
Initial Analysis shows 59% of members in 2016 are traveling greater than 25 minutes by public transit, as compared to 4.7% by car.
Future Considerations

Additional research of public transit travel time standards.

CBH to strategize data collection of our members' primary mode of transportation.

CBH is only able to assess methadone-assisted treatment; other types of MAT are available but unable to be tracked at this time.

Focus group discussions.
Acknowledgements

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Thank You