Using Spatial Analysis to Assess Accessibility of Obtaining HIV Healthcare by Bus in Newark, NJ

Valerie Cadorett, BS, BA, REHS
New Jersey Medical School Clinical Research Center
Department of Medicine, Division of Infectious Diseases

Background

- Essex County, NJ is one of 48 hotspot counties in the US where HIV transmission occurs most frequently and is part of the federal response to Ending the HIV Epidemic.1
- Newark is considered the epicenter of the NJ HIV epidemic.2
- At the end of 2018, the NJ Department of Health reported that Newark had
  - 15,651 new cases of HIV/AIDS3
  - 5,679 residences living with HIV/AIDS3
  - 9,504 deaths due to HIV/AIDS3
- Federally Qualified Health Centers (FQHCs) are an integral part of addressing medically underserved communities because no patient is turned away due to their inability to pay and care is provided on a sliding fee scale.
- Pre-exposure prophylaxis (PrEP) is effective at reducing one’s risk for acquiring HIV. In 2018 in Essex County, 628 people were prescribed PrEP, which is 12.2% of people who had indications for PrEP.4
- In 2018, 37% of households in Newark had no motor vehicles available and 39% of households had 1 motor vehicle available.5

Objective

- Determine if HIV healthcare is evenly distributed throughout Newark
- Assess ease of accessibility of obtaining HIV healthcare in Newark when using NJ TRANSIT buses

Mapping Technique

The spatial analysis was performed using Esri ArcGIS 10.7.1. Clip was used to create the Newark shapefile. Geocoding was used to plot all the addresses. New HIV diagnoses and HIV prevalence data was joined to overlapping buffers. The spatial analysis illustrated that less than half of the HIV healthcare resources are not evenly distributed throughout Newark.

Results

- The spatial analysis illustrated that less than half of the HIV healthcare locations in Newark do not prescribe PrEP and PrEP prescribers are not evenly distributed throughout the city.
- Zip code 07104 has the highest number of new HIV diagnoses but does not have a PrEP prescriber in the zip code.
- HIV healthcare resources are not evenly distributed throughout Newark.
  - Individuals who do not reside in the center on the Newark may have to take more than 1 bus to access HIV care.
  - 2 out of the 3 Federally Qualified Health Centers in Newark are not easily accessible by NJ TRANSIT buses.
  - Expanding the use of telehealth and home HIV testing could help bring HIV services to the Newark zip codes that have none.
- This study is limited by the data available on AIDSVu.org.

References & Data Sources


Conclusion

Increase Accessibility and Convenience

- Develop novel ways to bring HIV healthcare to patients
- Provide patients with bus tickets
- Advocate for more bus routes and stops at HIV healthcare locations
- Increase the number of PrEP prescribers

Future Research

- Quantify how many bus, how far a patient walks, and cost of transportation to obtain HIV care
- Determine if HIV viral loads are higher in areas that require the most inconvenient travel to obtain HIV care

Next Steps

- Increase the number of PrEP prescribers
- Advocate for more bus routes and stops at HIV healthcare locations
- Develop novel ways to bring HIV healthcare to patients
- Provide patients with bus tickets

Mapping Data Sources:

• NJ TRANSIT bus routes and stops within a 0.5 mile buffer of HIV healthcare resources with HIV prevalence and number of new HIV diagnoses by zip code in Newark, NJ

Locations in Newark That Offer HIV Healthcare

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<thead>
<tr>
<th>HIV Healthcare Resource</th>
<th>Total Number of Locations</th>
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<tbody>
<tr>
<td>HIV testing &amp; HIV care</td>
<td>10</td>
</tr>
<tr>
<td>HIV testing, PrEP, &amp; HIV care</td>
<td>8</td>
</tr>
<tr>
<td>FQHCs that offer HIV testing &amp; HIV care</td>
<td>3</td>
</tr>
<tr>
<td>Grand Total</td>
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</tbody>
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HIV prevalence per 100,000 people (2017)

<table>
<thead>
<tr>
<th>Prevalence</th>
<th>Number</th>
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<tbody>
<tr>
<td>1.159 – 2.146</td>
<td>2,147 – 3.132</td>
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<tr>
<td>3.133 – 4.119</td>
<td>4.120 – 5.105</td>
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<table>
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HIV Testing, HIV Care, & Federally Qualified Health Center (2020)


References: