Identifying venues for delivering youth HIV prevention program

June 29, 2021

Background

Rates of HIV are high among youth in South Africa. New HIV infections are highest among adolescent girls and young women ages 15-30. In addition, sexual violence against women is also high, also exposing these women to HIV. Rates are highest in the health district of "City of Johannesburg".

Our organization current implements a public health program that engages and supports young women 15-30 to reduce the risk of acquiring HIV. The program is a behavior change curriculum which addresses sexual and risk awareness, skills for safe sexual encounters, and strategies for preventing and mitigating gender-based violence. The program focuses in two (of six) health-subdistricts in Johannesburg where HIV is highest.

The evidence-based curriculum is a 14-week program, conducted in 45-min sessions that are held once a week. Until now, all programs are conducted either on site at a social welfare organization, at a community center, or in a school classroom. The program currently recruits girls and young women through government social service sites as well as government-funded social welfare organizations with partnerships with schools.

Problem statement

Girls and young women of the target age group (15-30) must be recruited to participate in the program and come to the government site for participation. However participation drops over time. Because youth are best influenced by their peers, an alternative approach to recruiting and retaining girls and young women may improve recruitment, retention, and completion in the program. We would like to explore conducting these program sessions at venues that are popular with youth, where youth choose to go to hang out, dialogue and meet friends and new people. The logic is that this approach will reach more youth, bring like-minded youth together in different settings, engage the youth on difficult topics right in the venues they frequent, and ultimately increase retention and completion of the program. At the same time, these venues are nearby to additional social services that youth can access for more private sessions. Should the approach prove successful, a future vision might also entail that such venues might become extensions of the health program with reputations for supporting youth with useful information and informed clients.

Purpose and Audience

The purpose of this analysis is to identify popular and appropriate venues that are in close proximity to the government-funded social services and social service organizations within two subdistricts of Johannesburg where HIV is highest. "Appropriate venues" is defined as a venue suitable for conducting small-group discussion of 45-min with 5-10 youth, once a week for 13 weeks. The result of the analyses will provide the program staff (i.e. the audience) with a guided list of venues to approach for engagement and participation in this important health program.

Data

Data for this analysis comes from two sources.

The first set of data comes from the current program files, with a list of 480 social service sites (government service sites and non-profit organizations (NPOs) covering all but 2 regions in South Africa. A subset of these data will narrow the list down to 2 health subdistricts in the City of Johannesburg District, covering health subdistricts A and F. The service sites have been all geotagged with GPS coordinates.

The second source of data will come from Foursquare, using venue data using the API. The date chosen for cutoff was April 20, 2021, which represents a time between COVID-19 restrictions. Sites, their addresses, distance from sites, and their categories were extracted.

Methodology

Only current sites with names and GPS coordinates were used. Sites were reduced to the City of Johannesburg.

Venue data were extracted from Foursquare that were within 1/2 kilometer (i.e. walking distance) of the program sites. Venues categories were consolidated into one category where they appeared similar, e.g. "café" and Coffee shop). This was done with casual restaurants, cafes, and Snack places – all of which were suitable venues for attracting, recruiting, and training youth.

After extracting sites, one-hot coding was used to associate all sites with venues. The number of venue categories were added up for each site to identify the highest frequency of particular venues.

Clustering analysis was performed using K-means. Because clustering wasn't looking for the most efficient clustering, but for an eligible pool of venues, groups were expanded to 6 groups. Pivot tables were used to reveal the groupings of sites as well as of venue types. Maps were performed in Folium.

Results

Of the 481 total sites in the social program in South Africa, 435 had a site name and geocoded with coordinates. Of those, 54 were in Johannesburg. To the right is a map of the sites in Johannesburg. 32 sites had venues listed in Four Square within 500 meters.

There were 117 venues that were within 500 meters of the 32 Sites. Those venues had 54 different categories as defined by Four Square.

After consolidating venue categories, there were 44 venue categories.

K-means cluster analysis using 6 clusters grouped the sites into the following categories. The two side-by-side tables below show the clusters, the sites in the clusters and the types of venues associated.
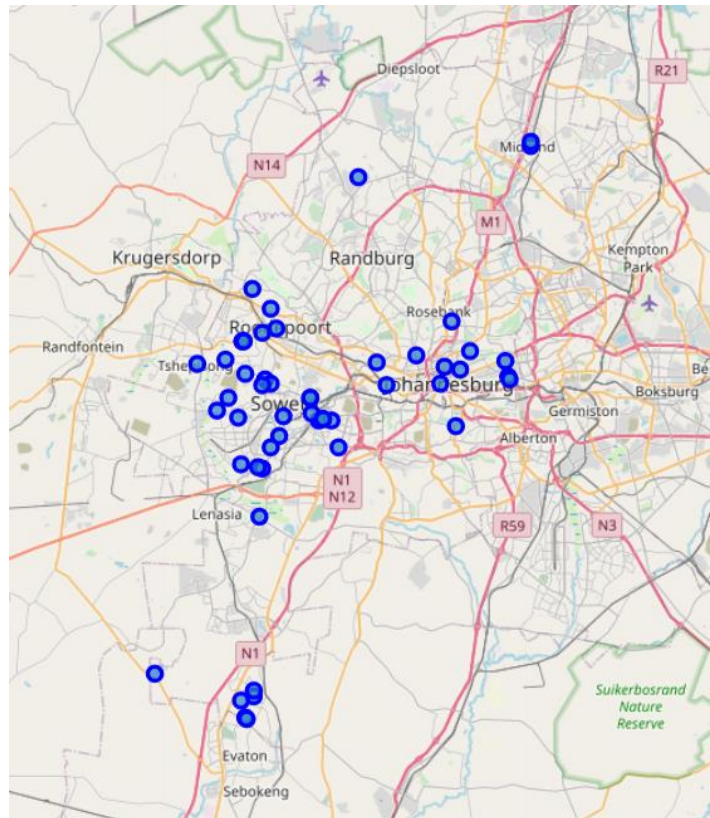
Cluster Labels	SiteName
0	MIDRAND CHILD AND FAMILY CARE ASSOCIATION
	MIDRAND SERVICE POINT
1	Abraham Kriel Maria Kloppers
	CHIAWELO COMMUNITY HEALTHCARE CENTRE
	CLEAN TOUCH
	CLEAN TOUCH ADMINISTRATIVE SERVICES
	ESSELEN CLINIC
	MALVERN CHC
	MUSLIM AIDS PROJECT
	Moepathutse Children Center
	Mofolo CHC
	Pimville service point
	Protea Glen Service Point
	SENAOANE SERVICE OFFICE
	SOWETO SERVICE POINT
	TLHOKOMELO DIC
	TSHEPANG HBC
	UITKOMS CHILDRENS HOME
2	Alexandra Service Office
3	Guild cottages
4	Abraham Kriel Westbury
	Braamfischer Clinic
	Diepkloof Service Point
	LENASIA SERVICE OFFICE
	ORLANDO CLINIC
	ROTLHE SONKE REVIVE ORGANISATION NPO 024-122
	Roodepoort Service Point
	Roodeport Child Welfare
	SIZANANI HOME BASED CARE
	Strathyer girls home
	TOUCH OF CARE
5	SAYAC

Cluster Labels	1st Most Common Venue
0	Casual Restaurant
1	African Restaurant
	Bar
	Construction & Landscaping
	Convenience Store
	Furniture / Home Store
	Golf Course
	Historic Site
	Home Service
	Italian Restaurant
	Print Shop
	Train Station
	Water Park
2	Coffee Shop
3	Convenience Store
4	Casual Restaurant
	Concert Hall
	Construction & Landscaping
	Grocery Store
	Home Service
	Shopping Mall
5	Casual Restaurant
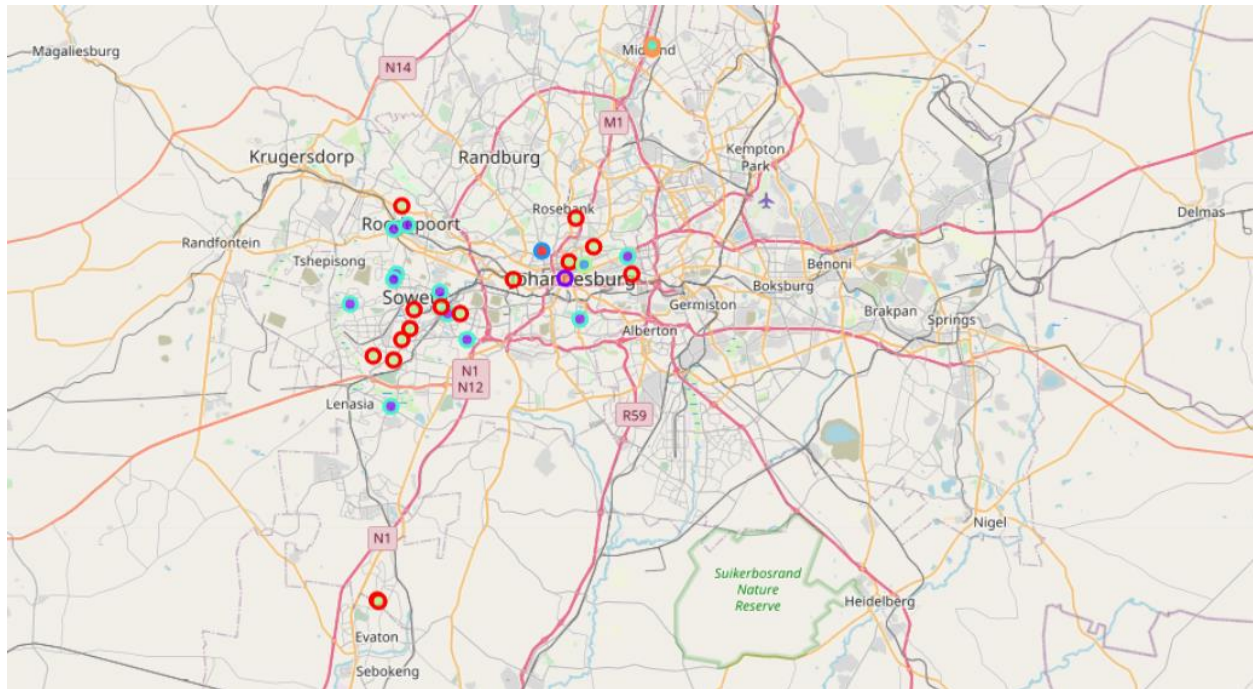
Discussion

Sites that were within 500m was considered walking distance from venues.

Clusters around Midrand and Sayac sites (Clusters 0 and 5) are remote but do have causal dining sites (mostly fast food restaurants) within walking distance. These are suitable sites to cover clients in these three sites.

A cluster of 16 sites (Cluster 1) represents those that don't have café's as much, but rather several recreational facilities, including water park and golf, which may provide suitable venues. A good number of these are in Soweto, which has more options.

Alexandria township (Cluster 2), where there are many venue options. This is a large site and can be served by a number of cafes as training sites.

Guild Cottages (Cluster 3) is in a more up market area, with many convenience stores but no other sites nearby. Unless this site doesn't have training venue available within its walls, there are higher end venues within walking distance, including a hotel, although this might be pricier as a training venue.

Cluster 4 has 11 sites, all of which appear to be served by causal restaurants.

There are some limitations with this analysis. These data have not analysed Foursquare ratings from just females users in the appropriate age range of the program, because Foursquare doesn't have age groups similar to the training program. In addition, some sites are remote with either no

venues within half of kilometer or just not recorded on Foursquare as these are poorer areas where youth may not own a smart phone with Foursquare use.

Conclusion

This analysis has revealed a number of options that can be pursued as training sites for the social training program for girls and young women ages 15-30. Staff can use these results to explore those venues to negotiate participation as a training site. The clustering reveals that a slightly different approach may be needed for clusters with different types of venues, particularly those with less youth-friendly venues.