Title

Geographic Mobility, Place Attachment, and the Changing Geography of Sex among African American and Latinx MSM Who Use Substances in Los Angeles

Journal

Journal of Urban Health, 97(5)

ISSN

1099-3460

Authors

Cassels, Susan

Meltzer, Dan

Loustalot, Colin

et al.

Publication Date

2020-10-01

DOI

10.1007/s11524-020-00481-3

Peer reviewed

J Urban Health (2020) 97:609–622
https://doi.org/10.1007/s11524-020-00481-3

Geographic Mobility, Place Attachment, and the Changing Geography of Sex among African American and Latinx MSM Who Use Substances in Los Angeles

Susan Cassels · Dan Meltzer · Colin Loustalot · Amy Ragsdale · Steve Shoptaw · Pamina M. Gorbach

Accepted: 2 September 2020 / Published online: 29 September 2020

Abstract The places that people go and interact with others, along with the characteristics of those places, determine degrees of sexual health risk and concomitant prevention opportunities for gay, bisexual, and other men who have sex with men (MSM). The objective of this paper is to use syndemic theory to guide analyses of 20 in-depth interviews with African American and Hispanic/Latinx MSM living in Los Angeles. We describe the places in which African American and Latinx MSM interviewees live and socialize, and how these places influence sexual behavior, drug use, and access to health care. We find common spatial patterns in mobility, incongruence in residential and sexual places, and differing geographic patterns of sex by men who use geo-social hook-up apps. Significant instability in home life and varying forms of mobility and risk-taking were a response to cumulative disadvantage and intersecting structural forces including poverty, racism, and homophobia. Our results strongly suggest that geographic mobility is a syndemic factor for HIV risk among MSM in Los Angeles, as mobility amplified negative impacts of other syndemic factors. Innovative place-interventions to reduce HIV incidence and disparities in HIV need to acknowledge the synergistic factors that drive higher HIV incidence among AA and Latinx MSM.

Keywords Race · Ethnicity · Qualitative study · Syndemic theory · HIV prevention

S. Cassels (✉) · D. Meltzer · C. Loustalot
Department of Geography, University of California, Santa Barbara, CA, USA
e-mail: scassels@geog.ucsb.edu

A. Ragsdale · P. M. Gorbach
Department of Epidemiology, Fielding School of Public Health, University of California, Los Angeles, CA, USA

S. Shoptaw
Department of Family Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA, USA

P. M. Gorbach
Division of Infectious Diseases, David Geffen School of Medicine, University of California, Los Angeles, CA, USA

Introduction

In the USA, new HIV diagnoses attributable to heterosexual contact have been declining. Incidence among white men who have sex with men (MSM) in the USA has been declining as well, but the number of diagnoses among men of color has remained stable [1]. African American (AA) MSM accounted for the highest proportion of all new HIV diagnoses in 2018 at 31%, though they comprise 12% of the US population; and Latinx (age > 25) were the only racial/ethnic sub-group with increasing trends for HIV diagnoses among MSM [1]. Stubborn racial and ethnic disparities in HIV exist despite biomedical advances and significant interventions targeting individual behavior.

Partly in response to persistent racial/ethnic and geographic disparities in HIV and findings that individual behavior does not predict higher incidence among racial minority MSM [2, 3], the role of place in driving and

maintaining exposure to HIV risk has been receiving renewed attention [4–8]. Interventions focused on individual behavior change are effective at reducing HIV risk behaviors, but are unlikely to reduce HIV incidence among MSM [9]. Indeed, AA MSM do not engage in more high risk behaviors, on average, compared with white MSM [3, 7, 10–12]; thus, these interventions would not reduce racial disparities even if they did reduce incidence. Social, structural (low income, underemployment, education), and environmental factors (disparities in HIV care access and use) including sexual network characteristics [13–15] may be important in determining HIV risk [7]. Place-based interventions, especially those that account for the context of exposures and risks in given places, may be potentially more effective.

Among gay, bisexual, and other MSM, multiple risk exposures contribute synergistically to excess HIV incidence [16–18]. Syndemic theory is the concept that multiple causes work together to exacerbate outcomes over and above each of these factors alone [19, 20]. Past work has suggested that depression and substance use, violence, and discrimination are syndemic factors for excess HIV incidence [18, 21–23], and more recently inequalities arising from race/ethnicity and challenges with mobility have been considered as syndemic factors. Racial/ethnic minority MSM, due to racism and other negative social and structural factors, suffer from higher rates of housing insecurity, poverty, and worse outcomes throughout the HIV care cascade [24]. Secondly, migrant and mobile MSM may have lower social cohesion or strong connections to local community, family support, and may be exposed to unfamiliar environments [25–28]. Lack of community connections or social support may lead to higher potential sex and drug-use risk behaviors [29, 30]; conversely increased social network support can protect against HIV acquisition [31]. Additionally, for MSM of color who experience additional stressors from racism and homophobia, negative health impacts from being highly mobile may be exaggerated. For instance, financial or social insecurity due to migration may exacerbate HIV risk differently for MSM of color.

Innovative place-based interventions to reduce HIV incidence and disparities in HIV also need to acknowledge the synergistic factors that drive higher HIV incidence among AA and Latinx MSM [19, 20]. Thus, the objective of this paper is to use syndemic theory to guide analyses of 20 in-depth interviews with African American and Latinx MSM living in Los Angeles. We aim to describe the places in which African American and Latinx MSM live and socialize, and how these places influence sexual behavior, drug use, and access to health care. We will assess the emerging themes from this study with regard to whether they support syndemic theory. Based on the principles of syndemic theory, we hypothesize that mobility is a syndemic factor that is interconnected with other risk factors for HIV including racial and sexual minority stress, substance use, sexual risk behavior, and HIV prevention behavior. In turn, we hypothesize that housing instability and high rates of mobility will be a consequence of historical and present racism and homophobia.

Methods and Data

Study Setting

Our work took place in Los Angeles County (LAC), a major destination for domestic migrants and new immigrants to the USA. Urban areas such as Los Angeles have long attracted lesbians and gay men [32, 33]; in 2015 Los Angeles had around 590,000 gay residents, or about 4.5% of the population [34]. Los Angeles County is also the top origin or destination for all migration flows in the USA [35] and has the largest total immigrant (or foreign born) population in the USA at 3,474,400 [36].

The LA metropolitan area comprises one of the most spread-out urban areas in the USA, with limited public transit and freeways as the only connection between places. This results in car-dependence, traffic, and a general aversion to traveling far outside an area when avoidable. However, parts of Los Angeles are strongly interconnected culturally and socially. West Hollywood provides a center point for the gay, bisexual, and other MSM social scene as well as the center of many MSM social networks in the LA area.

Sample

The participants of our study were a sub-sample of those enrolled in the NIH/National Institute of Drug Abuse (NIDA) funded mSTUDY—a longitudinal study designed to assess the epidemiological and immunological impact of substance use and HIV on racially/ethnically diverse young MSM. The mSTUDY has been described

elsewhere [37–39], but briefly, study enrollment started in August 2014 and is ongoing. Participants were recruited from a community-based organization providing a broad spectrum of services for the lesbian, gay, bisexual, and transgender community and a community-based university research clinic, both located in the Hollywood area of Los Angeles, CA. Inclusion criteria for the mSTUDY were: [1] between 18 and 45 years of age; [2] male at birth; [3] if HIV-negative, reported condomless anal intercourse with a male partner in the past 6 months; [4] capable of providing informed consent; and [5] willing and able to return to the study every 6 months to complete study-related activities including questionnaires, clinical assessments, and biological specimen collection. Inclusion for our study were: self-identified African American or Latinx mSTUDY participants who were able to be contacted and agreed to participate in our interviews. By design, half of our study participants were people living with HIV and half were HIV-negative mSTUDY participants. Additionally, half of the participants were men who used substances (self-report confirmed by urine drug screen) and half were men who did not use substances. mSTUDY participants for our study were recruited via email and telephone to ask if they were interested in participating. If interested, the study coordinator and participant set up an in-person interview at an agreed upon location in Los Angeles. In-depth interviews lasted 60–90 min. The interviews were conducted by two study coordinators, recorded, and later transcribed verbatim and checked for accuracy. All participants were compensated $25 cash for their time.

Each interview followed a semi-structured interview guide that asked about residential, social, and sexual neighborhoods or activity spaces, sex, and drug use in different places; perceptions of places; geo-social hook up apps; health care, HIV/STD testing, HIV prevention, and treatment; residential mobility; childhood neighborhood; and migration to Los Angeles. All study participants signed a written informed consent. The University of California Santa Barbara and UCLA Institutional Review Boards approved the study protocols.

Data Analysis

We used inductive coding derived from the interviews and a thematic approach to the analysis. As certain patterns and themes started to emerge, a core list of themes was selected and coding was refocused around those particular themes. The second half of the set of 20 interviews was coded in this manner, sometimes adding another key theme code as it appeared appropriate to do so. DM did the initial coding and identified the key themes; then SC reviewed the codes, made the final choices on codes, and re-reviewed all of the transcripts to ensure consistent coding. Coding was conducted in the qualitative data analysis software ATLAS.ti 8 for Windows [40], by DM and SC. We presented quotes by theme in Table 2, referred to them by number in the text, and highlighted the most relevant quotes.

Results

Study Sample

Sample demographics are described in Table 1. The mean age of participants was 32 (range 23–45), and the African American sub-sample was slightly younger. Most men were born in the USA (80%), but outside of LAC (75%). The average amount of time spent in Los Angeles since the last move was 7.4 years. The men self-identified as non-Hispanic African American (n = 7, 35%) and Hispanic/Latino (all races) (n = 13, 65%). One Latino participant identified as African American, one as Native American, and the rest identified as white. Most men self-identified as gay (90%), with two participants identifying as bisexual or pansexual. Similar to the mSTUDY in which half of the participants were people living with HIV, 45% of this sample was living with HIV. Just under half of our sub-sample had a positive urine drug screen at their mSTUDY visit closest in time to our qualitative survey. Common self-reported drugs included methamphetamines (n = 6; 30% of sub-sample), marijuana (n = 9; 45%), prescription opiates (n = 3; 15%), and poppers (Amyl nitrite, Butyl nitrite) (n = 5; 25%).

Attachment (Detachment) to Areas and Mobility between Areas

Many respondents did not feel specific connections to their neighborhood or did not express strong ties with their neighbors (#1–11). Most of the respondents who expressed this sentiment mentioned that where they live is simply where they sleep (Table 2, quote #11) and store their belongings (#5). Other men mentioned that they like to be on the move, and not stay in one place too

Table 1 Socio-demographic characteristics of mSTUDY sub-study participants ($n = 20$)

	Total		African America		Latinx (all races)	
	n (average)	% (range)	*n* (average)	% (range)	*n* (average)	% (range)
Age (years)	32.4	23–45	29.7	26–35	33.8	23–45
Foreign born						
Yes	4	20%	1	14%	3	23%
Born outside LAC						
Yes	15	75%	5	71%	10	77%
Years since most recent move to LAC	7.4	0.25–23	7	2–17	7.7	0.25–23
Sexual orientation						
Gay	18	90%	6	86%	12	92%
Bisexual	1	5%	1	14%	0	0%
Pansexual	1	5%	0	0%	1	8%
Substance use*						
Positive urine drug screen	9	45%	3	43%	6	46%
HIV status						
HIV-positive	9	45%	3	43%	6	46%
Total	20	100%	7	100%	13	100%

LAC Los Angeles Country

*Data from mSTUDY visit closet in time to qualitative interview

long. Therefore, they did not want to make social connections, or they did not develop a cohesive community with their residential neighborhood. Among men who did not develop a sense of attachment to their neighborhoods, mobility was tied to lack of social cohesion, which is associated with heightened risk of HIV [41–44]. Additionally, lack of social cohesion between men and where they live may lead to more mobility, more separation of social and sexual spaces, and more risk for substance misuse. Thus, mobility and place attachment are interconnected and may contribute to and/or exaggerate HIV transmission risks.

Due to turnover related to neighborhood change or gentrification, it was difficult for some people to establish roots in a particular place. Thus, some neighborhoods became more of a temporary place to stay than a cohesive community (#1, 3). On the other hand, some respondents mentioned positive links to home neighborhoods (#12–17). More often than not, these places had LGBT representation or a sense of a gay-friendly community (#12). West Hollywood was one neighborhood where some respondents felt comfortable with respect to sexuality. West Hollywood remains a center of gay life for the area and functions as a safe haven especially for gay men. Other neighborhoods, especially those with a strong LGBT community presence, were seen as safe as well.

Many participants reported a separation of social and sex spaces (#18–23). Some participants explained that they preferred to find sex partners in areas far from their homes, and to keep a distance between the locations where different parts of their lives took place. When specifically asked about sexual spaces, one participant, a Hispanic 41-year-old HIV-positive man said succinctly, "I kind of live my whole gay life somewhere else, not in my neighborhood (#20)." This may have been because some individuals felt the need to be cautious about disclosing their sexuality (#19). One study participant used sex acts to secure shelter for the night. Others mentioned that they did not want to engage in sex acts in their residential neighborhood and instead engaged in sex acts in other places. Some men choose to keep their social and sexual places separate, while it appeared that others felt the need to keep them separate.

Determinants of Mobility and Chosen Spaces

A large portion of the interviews focused on participant geographic mobility through the LA area at several different time scales. At the daily time scale, participants

Table 2 Quotes of African American and Hispanic MSM by theme

Attachment (detachment) to areas and mobility between areas		
Lack of connection to home neighborhoods		
1	"Like, where I live does not matter. Do you know what I mean? I just want it to be nice.But I go to places where I know I can find what I want to find, if I want to have it"	AA, 28 years, HIV-pos
2	"Places do not really have an effect on me like that. I do not have places have thatkind of effect on me"	AA, 28 years, HIV-pos
3	"I do not think I am committed to [my neighborhood]"	Hispanic, 32 years, HIV-neg
4	"[I am moving] because I do not like-- because I've always been the type to--do not like to get familiar with-- I do not like to stay in one area too long."	Hispanic, 39 years, HIV-neg
5	"Um, to be honest, I do not really hang out at my neighborhood, so…like… it's a placewhere I sleep and where my stuff is, like it's where I live, but it's not necessarily whereI do all my stuff at"	AA, 35 years, HIV-pos
6	"Well, it was fine but I never felt like I belonged, cause it wasn't my place, I always neededto um, to make myself almost invisible, because that was the way that I grew up,"	Hispanic, 45 years, HIV-pos
7	"I mean honestly this is just where I live. Do you know what I mean? Just because I live in a--usually live in a place does not mean I necessarily make friends with the people that livearound there. Because I'm busy. I'm doing stuff. I got shit to do."	AA, 28 years, HIV-pos
8	"People aren't as friendly as and welcoming, and I do not know any of my neighbors.I do not talk to any one of my neighbors. I only have three friends in LA. And those people idid not even meet in LA."	Hispanic, 28 years, HIV-pos
9	"Like, i love, i love my apartment. My apartment is like my home. I go to my room there andit's my home, my sanctuary. I do not want-- i just wish i could take that building and moveit to another neighborhood."	Hispanic, 28 years, HIV-pos
10	"I mean where I live on Skid Row downtown Skid Row there's nothing posh, there'snothing glamorous, there's nothing."	Hispanic, 39 years, HIV-neg
11	"No, not really, I only go there to sleep"	AA, 28 years, HIV-neg
Positive links to home neighborhoods/places		
12	"The place where I live… to be honest, I am just happy that I have a place based on my experience and my situation, I am just glad that this place exists for gay people, so I feel comfortable, I feel safe, and everything that I need, so I am just thankful for that"	Hispanic, 45 years, HIV-pos
13	"I feel great. I feel like everybody is kinda on the go, or like everybody is creating something. it's just so many artists and so many dancers that you see everywhere. it just has a really cool vibe to it and I like it. just believe like a home is a safe space, and I always want to live in a community that I feel safe in and I feel like I want to come home to it"	AA, 31 years, HIV-neg
14	"I feel comfortable and I feel safe, um, I like that most things are walking distance, the grocery store, you know, the movie theater, um, restaurants, bars, um, so that's important to me. There's quite a bit of representation in the LGBT community, um, so that's about… that's where I live, um, it feels safe, um, I like it because I am in between two larger cities. but for the most part, I spend a large part of my time, mostly of my time, um, like within my city, within a 2 mile radius"	Hispanic, 34 years, HIV-neg
15	"Um, people are definately gay, out, and proud there [WeHo] and uh, and um, there is a sense of community there um, because of that,"	Hispanic, 32 years, HIV-neg
16	"[West Hollywood] is clean, it's close, that I feel safe and comfortable there, um, I can you know, wear what I want and do what I want and act like what I want without fear of really being stigmatized for being gay, um, I know there's a lot of judgement within the gay community, but I could really care less if someone thinks I'm cool or not, or hot or not, more so than I would be more concerned over someone you know, hate criming me or um, slurring me"	Hispanic, 34 years, HIV-neg
17	"I do not know. I do not interact with the people there [West Hollywood]. It's-- there's no interaction there. verses where I'm living now, there is more of interaction where you actually see… [Living in South LA now] It's-- I like it. it's home for me. I'm comfortable. it's like-- to me it's like the center"	AA, 28 years, HIV-pos
Separation of social and sexual places		
18	"Yea, i do not like really going too much in my neighborhood to have sex. And i do not like having sex at home either."	Hispanic, 39 years, HIV-neg
19	"I think outside of West Hollywood everybody is more guarded about their sexuality and whatnot"	Hispanic, 41 years, HIV-pos
20	"I kind of live my whole gay life somewhere else, not in my neighborhood."	

Table 2 (continued)

		Hispanic, 41 years, HIV-pos
21	"Uhm, [people who I hook up with] definitely cannot live in my neighborhood"	AA, 35 years, HIV-pos
22	"Ummm, I do not have sex where I live, I try not to do it there."	Hispanic, 35 years, HIV-pos
23	"Oh, I would say two completely different worlds. I would say Ladera is more a place to lay your head. More-- feels more like home. Not that downtown is not home to people, but that's not my relationship with that part of the city, so it does represent something different to me. Like, nightlife and that social element"	Hispanic, 28 years, HIV-neg
Determinants of mobility and chosen spaces		
High rates of geographic mobility		
24	"I've moved-- I went to rehab so I… Not really no. I mean I move twice, three times now."	AA, 28 years, HIV-pos
25	"So i lived in [ER], I lived in [MH] which is kind of the same area but just like literally 5 minutes down the street from one another. I'm going to just call it two different communities and then after that I lived in Hollywood for about 3 years alone and then I moved to North Hollywood and then Studio City and then back to North Hollywood Arts District. Yeah, so I lived in like six different places"	AA, 31 years, HIV-neg
26	"Then I came back I was staying with this person. We were off [Location 1]. And then from [Location 1] to [Location 2], from [Location 2] to [Location 3], from [Location 3] to [Location 2]. From [Location 2] to East LA, from East LA then I was living with my ex in South LA, and I now reside in South LA."	AA, 28 years, HIV-pos
Homelessness and housing instability		
27	"And at the time a friend of mine that lived here said 'you know what if you come over here (LA) and help me out with my partner you can stay here with us and we'll work something out.' and i did. He told me that on like a tuesday and by thursday i was here. I did not even think twice. But that did not go too well. There was a lot of jealousy and a lot of high drug use and i just could not handle it. So, that's the first time that i was actually homeless for 2 or 3 months until i got the apartment. And the apartment burned down in july 2016. And then just bouncing back and forth and officially I became homeless since february."	Hispanic, 40 years, HIV-pos
28	"And, you know, I think that was like my downfall when I moved out here because I really wanted to work for LGBTQ agencies and so for the first year I moved in with my sister and like I was… because me and my sister did not have that great of a relationship, I kept like houses surfing to different peoples houses, so I was basically experiencing homelessness"	AA, 28 years, HIV-neg
29	"I was in rehab up in the high desert area, [WS]. I stayed there for 4 months and I had nowhere to go. I got a card from one of the-- I was going to say inmates-- the in-patient people. And he was, you know, like "hey if you do not have anywhere to go, here, call this guy and tell him that you are working your program and he'll hook you up with a homeless shelter." Bam. so, I took his card, and I wound up in Pasadena."	Hispanic, 32 years, HIV-neg
30	"So I think I only stayed another 3 months and ended up getting a job and I afforded enough money to like move to downtown, so I ended up staying in downtown in a community, but it was a community bathroom floor situation, almost like little bungaloos, like in a old hotel building, revamped, which a lot of which were downtown, it was really nasty, it had bed bugs, it was really gross"	AA, 31 years, HIV-neg
31	"I went to the treatment center. It was outpatient, it has sober living there as well. I was working for another organization as a volunteer and, umm, for a harm reduction class. And umm, I basically called the man and I said if my options are running out, I'm tired of jumping from house to house, or sex clubs, to have somewhere to sleep, and I have HIV - I'm homeless and HIV. And he was like, "You're a high risk. Let me call you back in ten minutes". He called me back and said "You need to be at this destination, by 10 AM" And uhhh, he got me in, for treatment somewhere. And most people have to go through a process of waiting this or inpatient - I was fortunate enough to not have to to that. The past two years is the best because I have a home and I do everything in my power to keep it"	Hispanic, 35 years, HIV-pos
Race and racism in experiences and places		
32	"There's not much HIV homosexual African Americans, there's not much of that there. I would probably go elsewhere cause it probably would not be a safe thing to do there"	AA, 35 years, HIV-pos
33	"Depending on where I was, you know… South Central they usually-- there's a large Latin and African American population. Silverlake is mostly white. West Hollywood is mostly white. East LA is mostly Hispanic. So, depending on where I was, yeah. Definitely would have been somebody different."	Hispanic, 40 years, HIV-pos
34	"There was like no stability, I could not find a stable job, it was like the economic downturn. It was really… just terrible and because I think it had a lot to do with my race."	AA, 28 years, HIV-neg

Table 2 (continued)

35	"I would go to like um, Latino night, which is like black and latino night at… in West Hollywood to different clubs. Um, I would go to like… there is this place in Inglewood, and they have… it's a gay bar, and it's predominately black, there is like a sprinkle of white people that go, a sprinkle of latino, but it's predominately black and I go there, so yeah, cause I feel more comfortable there"	AA, 28 years, HIV-neg
36	"So I found myself in a lot of gay white spaces and even with being a white gay spaces, I was treated like a leper and so there was a lot of opportunities at work not given to me"	AA, 31 years, HIV-neg
37	"I mean the type of income I have, and the type of occupation I have, you are limited to the options that you have. I mean I can blame it on me being black. I just, that's where I can afford to live."	Hispanic, 39 years, HIV-neg
38	"[Skid Row] is its own little world man. It's crazy. Again there i do not fit in. there, I definitely do not fit in. As much as i try, they make it a point to make me feel like I do not belong there. Predominantly because the population there is african american. So, anybody that does not look like them they are outsiders"	Hispanic, 40 years, HIV-pos
39	"Like I go to the gym, I try to eat healthy, but I'm not like the typical perfect 'West Hollywood Gay"	Hispanic, 28 years, HIV-pos
	HIV prevention, testing, and seroconversion	
	Challenges	
40	"The thing was that it was way far out of the– like I would take three metros and a bus just to get there. And if I was late like 5 or 10 minutes I would have to reschedule."	Hispanic, 40 years, HIV-pos
41	"Yes, there was a time I'm gonna to say about a year ago. I was at another clinic and there was a discrepancy with the doctor and the prescription and the pharmacy. And I went without medication for like 6 months. Because they were only seeing me every six months. And i think i might have missed an appointment, so I had to wait more time. And in the stress with all that was going on and i actually became detectable. It wasn't that high, but it was detectable."	Hispanic, 40 years, HIV-pos
42	"It's been a long [since HIV test] – I used to do it like every month but it's not been like that. And i do not know... maybe because I do not have a car right now and it used to be like a track in Santa Monica where you could just go and get the rapid test. Maybe because of that."	Hispanic, 26 years, HIV-neg
43	"Like, if I had never moved to LA I probably would not have HIV. That's… yeah."	Hispanic, 28 years, HIV-pos
	Opportunities	
44	"So it's not like I've never like had instability when it came down to medical treatment. so I've always had refills and I've always stuck with like a pharmacy franchise to where I can go in any pharmacy because I've always dealt with stuff like Walgreens CVS. so those types of pharmacies"	Hispanic, 39 years, HIV-neg
45	"But regardless I still go through– it's a [HIV testing] van that they do right across the street from me. so I'll still do that like every 3 months."	Hispanic, 39 years, HIV-neg
46	"I mean, there's like HIV testing trucks everywhere. So if I see a truck with a rapid HIV test and I've had unprotected sex recently, I will just jump in and get checked"	Hispanic, 32 years, HIV-neg
47	"[Last HIV test] It was a mobile van, um, it was for Halloween, um, the Oasis clinic had a Halloween party and I got tested in a van"	AA, 28 years, HIV-neg
48	"The clinic here versus [other country]: we are better because within a week I was able to get all my STDs results, my CD4, my viral load count and all that versus [other country] sometimes I do not get them I do not know anything I do not get any response or anything. So it's really different."	AA, 28 years, HIV-pos
49	"I think here in LA, if you do not have the care for your ailment that's because you do not want to. Because there's clinics all over the city from different organizations, from different– so there's no excuse not to have care. If you do not to have it it's because you really do not want to, because it's everywhere."	Hispanic, 40 years, HIV-pos
50	"I always been very lucky [with accessing HIV care], I am afraid I always because of my legal status [visa expired] and what happens if I am not able to get my medication"	Hispanic, 45 years, HIV-pos
	Hookups and finding sex	
	Role of geo-social hook up apps	
51	"Just people's houses. It's just become more– and this is kind of what's killed the gay scene in my opinion is just the fact that first there's grindr. So there's no need to go out and meet anybody because it's right there in your phone"	Hispanic, 41 years, HIV-pos
52	"Online. Just online. That's it. I do not go to sex clubs. Nothing like that. Just online."	Hispanic, 37 years, HIV-pos
53	"Grindr. Adam. Craigslist. No, scratch that. I look at Craigslist but it's mostly Adam and grinder. I usually travel locally within 5 miles, 5 to 10 miles. the reason why is because I do not want to bump into somebody while I'm in the streets. if they are right there and it's like mid-morning, not even mid-morning, like early morning– you know, i know that Tweakers are out and you know they never go out. I mean I know what's up."	Hispanic, 32 years, HIV-neg

Table 2 (continued)

54	"And then so I was just finding places to stay you know through apps and other sources. Yeah, yeah. you know, and so I had this schedule of okay I'm going to hook up from like 11 at night so I can end up spending the night there and then leaving in the morning. like that. if I have things to do then I can leave in the morning and do my thing. I mean it's constant I had to do it everyday. and sometimes they would let me stay there like a week or whatever. But, I did that until i was [inaudible]. And so that was very overwhelming."	Hispanic, 40 years, HIV-pos
55	"Like I would not sign on [to an App] when I'm at home. I go like to Inglewood, or to West Hollywood, or… like certain places in LA"	AA, 28 years, HIV-neg
	Geography of sex	
56	"Silverlake being one of them, because I believe it's like– it's kind of like West Hollywood but a little bit more for the Bears, kind of thing. for the bearded ones. so Silver Lake is a good place. South Central is a good place. dangerous a little bit, but not as dangerous as Skid Row. I think, you know what, all of LA is a good place to hook up, because anywhere you go, especially if you are not from that neighborhood and then you turn on Grindr and they see that you are like oh I've never seen this guy before, so that kind of helps to kind of be a little nomadic and just travel around the city."	Hispanic, 40 years, HIV-pos
57	"Well mostly I like young guys, so I either like, for example, like guys here. You know what I'm saying? Guys here. But usually guys here– I mean the average age of people moving in WeHo when I first moved here was 25 and up. Now it's like 30 and up. Like when I go to UCLA because there's younger guys there. But that's about it."	Hispanic, 37 years, HIV-pos
58	"Yeah, I never go clubbing anywhere outside of WeHo"	Hispanic, 37 years, HIV-pos
59	"But downtown is like my place of choice [to hookup], Whether it be overground or underground,"	AA, 31 years, HIV-neg
60	"there's so many places that you can go, or even just gay accepting, or queer accepting, you know, if you wanna take it to that level, so I do frequent them with my friends, and as far as underground spaces, um, mostly within like past Skid Row, there's a couple of venues that I have been working with and talking to, you know, I am not going to say their address or anything, but um, mostly like in the Skid Row areas, and again, those parties, the undergrounds are definitely where everything is acceptable, it's almost like place for things to be acceptable, um but I am also about a correlation that is all about safety and drug training, um, kinda going to right after this but, um, having trained with how to deal with… people OD-ing on meth, or on um, ketamine, or on G, or on any of the popular drugs, I have been given like narcan training, um, and I go into those spaces ready for that, so I tend to frequent most of the underground spaces just to make sure people are being safe"	AA, 31 years, HIV-neg
61	"Inglewood, South LA, I do not do too much Hollywood cuz I cannot stand it."	Hispanic, 39 years, HIV-neg
	Substance use	
	Accessability and place	
62	"Yeah, there's a lot of people even on grindr that are like "on deck" or even offering it to people"	AA, 31 years, HIV-neg
63	"For sure. For s– and the amount of dru– oh my god the amount of drug use people use [in WeHo]. That's for sure. Yeah. I mean I do not use drugs at all but that's really really huge and really abundant. And I mean, I was talking to my friend actually the other day about that. When I first came over here maybe like 20% of the guys that I hooked up with, you know, doing drugs, were doing crystal meth, whatever, you know. It's gotten to the point of 90%. That's a lot. That's really really huge. Imagine it went from 20% to 90%. That's a lot of people"	Hispanic, 37 years, HIV-pos
64	"After I left the house at like 22 I started living in my car. and I picked up a really bad crystal meth– I mean I've had one, but it got really bad when I was in the streets."	Hispanic, 32 years, HIV-neg
65	"so I started doing the meetings, outpatient, I'm on disability, and I just get bored with how boring life is. so I meet the wrong people in the outpatient and start using again. and I'm being homeless again because of my using"	Hispanic, 32 years, HIV-neg
66	"I did not - I did not get into drugs until I found out my (HIV) status and that - that really- it's anywhere you turn and that's what bothers me"	Hispanic, 35 years, HIV-pos
67	"I was diagnosed with HIV, so I think the HIV made me use it more often, because I did not know what came to my mind, that I never… I thought I was going to die, so I just kept on using, and that I… and that was the people that I started meeting, that… when I discovered that world–it just opened, opened up a new door for me"	Hispanic, 45 years, HIV-pos
	Substance use and sex	
68	"Especially if I am cross faded, smoking and drinking, or if I'm doing shrooms or something like that, um, I tend to get really hyper horny and then I like really cruisy and like I really wanna do like the highest extent of my like kinks, you know?"	AA, 31 years, HIV-neg
69	"Mostly like in the Skid Row areas, and again, those parties, the undergrounds are definitely where everything is acceptable,	AA, 31 years, HIV-neg

Table 2 (continued)

70	Yeah, we, it was friends. We were using. We rented a hotel. A suite. And then we invited guys over. Like friends and… meth … having sex. it was the sex party."	AA, 28 years, HIV-pos
71	"Meth and sex go together"	AA, 28 years, HIV-pos
72	"And it is like - it's a challenge - I do not know - it's a struggle right now for me - because I know that I'm worth more, but I know where I can go at the end of the day if I want to get high or wanna have sex. And they go together. Now this is something I've been struggling with for awhile"	Hispanic, 35 years, HIV-pos

moved both large and small distances, depending on personal circumstances, on whether their work and home life were separate, or whether their home and social lives were separate. No matter the spatial or time scale (over the course of a day, or over the course of months), the participants of this study had high rates of geographic mobility (#24–26).

The geographic activity spaces of the participants were large. While many respondents did not feel attached to particular neighborhoods, there was often attachment to general areas. Since mobility in LA mostly revolves around cars, the scale of movement was usually large. A person's home life and social life can take place in different neighborhoods, which resulted in activity spaces embedded within a region of LA. However, it is still impractical to travel regularly to other regions of LA, so there was a sense of belonging to a larger region, even if not a neighborhood. Safe spaces for gay men appeared to be expanding and changing in size and location. The neighborhoods that were most commonly mentioned as locations where participants spent time were West Hollywood, Silver Lake, and Downtown. Other key neighborhoods mentioned, not necessarily in the context of being LGBT friendly, were Skid Row, Koreatown, Echo Park, and Hollywood.

Residential instability created churning patterns of movement around the LA area for many participants (#27–31). Although many participants had made one large move from another part of the USA or from another country, after arriving in LA they usually lived in a number of different places due to general financial instability, family or relationship instability, and addiction. Drug rehabilitation, problems with family or relationships, and homelessness were key determinants of residential location and duration (#28).

The role of poverty and access to resources was crucial in the way that people interacted in place and space (e.g., #30). Money had a deep impact on all patterns of social and sexual interaction across the region. Whether this was because participants were looking for affordable rent, were forced to live on the streets, or were using hookups as a way to have a place to stay for the night (#54), access to resources and money determined aspects of geographic mobility. Gentrification and the rising costs of living (especially apartment rentals) were also key determinants. Many participants had been pushed out from neighborhoods where they had grown up or spent time, or they had seen friends and community get pushed out of areas, with some neighborhoods gentrifying faster than others. In these cases, mobility and poverty often worked synergistically as drivers of HIV risk.

Lastly, cycling in and out of drug rehabilitation programs often determined residential and social neighborhoods (#24, 29, 31). After rehab was over, or during different experiences in rehab, the connection to specific locations and facilities had a strong effect on the daily geographic reach of their activities. For example, some key facilities and social services were located in Skid Row, and others located farther out. The location of the particular services was an anchor that determined where social and sexual neighborhoods could be, or where it was likely someone might be able to get housing afterwards. Many participants also lived in sober living homes after rehab, which also played an important role in determining residential location. Mobility often exacerbated issues of substance use, and substance misuse commonly led to problems with housing security.

Race and Racism in Experiences

Locations of social and sexual networks had racialized patterns and followed particular racial distributions (#32, 33, 35, 36, 38). Because LAC has clear patterns of racial residential segregation and because of the experience of racism within different parts of the city, many participants considered the impact of race on who they associated with and where (#32). Some race-driven geographic mobility was for safety, while other mobility was to find the "type" or race/ethnicity they were looking for (#33). Racism, both interpersonal and structural, appeared to be magnified by mobility patterns

of individuals, and spatial patterns of mobility were driven by racism. Mobility may exacerbate the negative health effects of racism by limiting the space in which people can navigate.

It was very common that participants would mention their experiences with racism in LAC, especially with respect to gay experiences and communities. However, it is important to note that participants were impacted by racism in both predominantly gay and predominantly straight spaces. Experiences ranged from micro to macro aggressions, as well as systemic barriers, and these experiences played a large role in geographic mobility (#36). Although West Hollywood was a center of gay life for the LA area, it also was a place where one would be judged for appearance, specifically with strong racist undercurrents as it was seen as a predominantly white space (#39). There were certain normative expectations of how to be, appear, and behave in West Hollywood that could function to exclude individuals who did not fit the description.

HIV Prevention, Testing, and Seroconversion

It was extremely common for participants to test for HIV at mobile clinics outside bars and clubs (#46, 47). These kinds of free and available resources were widely used by our study population. Other participants mentioned that the availability of services, and the quality of HIV care in the city, was excellent (#44–50).

Mobility-related difficulties were prominent in participants' experiences of HIV prevention and care space in LAC. Barriers to moving around LA, such as far distances to clinics and dependence on cars (#40, 42), caused difficulties in getting services, going to appointments, and accessing medicines. Thus, mobility may exacerbate existing barriers to accessing HIV prevention and care.

Some participants seroconverted after arrival in LA, which implied a relationship to the migration event or change in location as a risk factor related to seroconversion. The evidence for this is limited, and cannot be ascertained in a study like ours. Nonetheless, one participant said, "Like, if I had never moved to LA I probably wouldn't have HIV. That's… yeah." (#43).

Hookups and Finding Sex

Apps were very influential in hookup culture (#51–55). Geo-social hookup apps led to blurred geographic and spatial boundaries, and influenced where people would meet and interact sexually. "This is kind of what's killed the gay scene in my opinion is just the fact that first there's grindr. So there's no need to go out and meet anybody because it's right there in your phone" (#51). Cruising sites remained popular in some areas of town, but references to cruising was relatively uncommon and Apps were much more popular as a way of finding sex.

Geo-sexual hookup apps appeared to be influential in the shift of hookups from public spaces to private spaces. The shift appears to be related to age as well, with gay bars relegated as older gay male spaces as younger adults use hookup apps. One participant referred to public spaces as "overground" and private places as "underground," and that hookup apps made it easier to meet or host groups of men in private settings (#59). Underground or private settings took the "guess factor" out of hooking up, were cheaper than bars or clubs, but also were possibly associated with higher risk behavior and substance abuse. Thus, by altering the context in which sexual encounters occur, mobility may be associated with sexual risk behavior if indeed underground venues are associated with higher risk. Patterns of mobility, different risk exposures in venues, and substance abuse appear to be interconnected and contribute to HIV risk.

Apps seemed to be changing the geography of sex in a second way as well. Apps may have an influence on geographic mobility and sexual mixing patterns of partnerships such as race or age mixing. One participant described having different kinds of potential hookups in each neighborhood (#56). Thus, different types of social and sexual neighborhood formation may be mediated by app activity. Lastly, using apps helped individuals keep their residential and sexual activity spaces separate (#55).

Substance Use

Substance use was featured prominently in most interviews, partly because the mSTUDY sample was designed to focus on substance-using populations in Los Angeles. Nonetheless, substance use was intricately tied to issues of insecure housing, poverty, cycles of homelessness, hookup apps, and social networks (#62–67). Some participants mentioned that addiction was one of the key determinants of cycles of poverty and homelessness (#64). Others referred to substance use as a consequence of HIV infection (#66, 67), a way of connecting

with other people (#67), or a part of a cycle of homelessness and rehabilitation (#65). All of these examples suggest that mobility and substance use synergistically contribute to higher HIV risk.

Use of certain substances, such as crystal meth, was frequently accompanied by sex, and occasionally higher risk sex behavior (#68, 69). Although some people used meth without having sex, usually it was accompanied by sexual activity, often in groups or at parties (#71). Meth use was more common in houses, sex parties, and non-public locations than in bars or clubs (#70). However, a number of respondents actively disagreed with the idea that app use could influence their substance use. For many, using an app helped clarify preferences ahead of time. For example, "party and play" indicates the person likes to use substances for sex, so it was easier to select someone who would be compatible.

Discussion

In this study of African American and Latinx MSM who use substances in Los Angeles, an encompassing theme that emerged is instability in home life, as a consequence of cumulative disadvantage due to varying oppressions including racism and homophobia. Often, this led to varying forms of mobility, stress, substance use, missed HIV prevention and care opportunities, and sexual risk-taking, as a response to intersecting structural forces. Our results strongly suggest that geographic mobility should be considered a syndemic factor for HIV risk among MSM in Los Angeles, as mobility often amplified the negative impact of other risk factors.

These findings point to different ways mobility can affect HIV risk, depending on whether MSM are mobile by choice or experience mobility due to housing insecurity in Los Angeles. Among MSM with housing stability, mobility may amplify other risks including racism, social cohesion, place attachment, barriers to HIV treatment and care, opportunities for sexual encounters in higher-risk or "underground" spaces, and separation of social and sexual spaces that would otherwise buffer HIV-risk. Mobility as an outcome of housing instability may be easier to understand as a syndemic factor, as poverty and housing insecurity are established syndemic factors for HIV risk among MSM. However, we argue that mobility has direct contributions to the syndemic above and beyond its role in housing insecurity.

Overall, the participants in the study had high levels of mobility at multiple different scales. Drivers of mobility included substance use and rehabilitation, stigma, racism, and poverty; these factors are intricately tied and work synergistically to increase HIV risk. The majority of participants were born outside of Los Angeles County, and many lacked a strong attachment to their current place of residence. It was very common for participants to describe living in multiple places of residence after their arrival to LA. Housing insecurity was common as well due to inability to pay rent, conflict with family or friends, or issues with substance misuse and attempts at rehabilitation. Not surprisingly, many participants did not describe a sense of belonging in their residential community, and spent time in other places. Frequent mobility, especially if it leads to lower levels of social capital or social cohesion, can influence HIV risk among MSM since low social support can be associated with riskier sexual behaviors [41–44].

Issues around mobility were sometimes barriers to well-being as well. For some participants, seeking safe housing was a basic need, and trumped the ability to engage in or seek healthier behaviors. For one participant, casual sexual acts were strategically used to secure housing. Many participants mentioned that they did not want to engage in sexual behaviors in their residential communities, and thus, many sex acts occurred elsewhere. This could be an HIV risk factor if individuals are not able to access HIV prevention tools or practice safe sex when they are on the move. Lastly, especially for those without access to cars, mobility within LAC was challenging and time-consuming and acted as barriers to accessing HIV care and prevention. On the other hand, some participants described safe and vibrant home communities, and those were often gay-friendly communities with high LGBT representation. Thus, the context of mobility, housing, and social support matters; some residential places may be protective, and other places may amplify risk due to neighborhood characteristics. Our work adds to the literature to suggest that HIV prevention and treatment interventions need to be responsive to larger social and structural factors of place and populations, including issues of racism, stigma, housing insecurity, and substance use. Identifying characteristics of neighborhoods that offer positive and supportive environments for MSM of color may be used to inform interventions or policies to improve conditions in less healthy neighborhoods.

Our study also described important geographic places for at-risk MSM. We found common patterns in mobility, incongruence in residential and sexual places, and interesting geographic patterns of sex with geo-social hook-up apps. Not surprisingly, West Hollywood was a very common place for participants to engage in HIV risk behavior and substance use, but it was also a place where participants engaged with HIV prevention messages, mobile testing vans, and other prevention opportunities. Additionally, a number of participants mentioned that the number of safe "gay" places in the city was growing. It also appeared that racial mixing patterns and the geography of sexual partnerships mirrored patterns of racial and ethnic compositions of neighborhoods in LAC.

Many participants experienced a separation of social and sex spaces. Participants explained that they preferred to find sex partners in areas farther from their homes, and to keep a distance between the locations where different parts of their lives took place. Our findings are similar to other research on MSM mobility and risk behavior that many men do not feel connected with their residential neighborhood and that sexual, social, and residential neighborhoods are often very different places [45]. Thus, if an intervention is targeted to a place in which a person living with HIV lives, which might not be a place in which he engages in public life, then the intervention might not be effective. Personalized public health is a new, effective way to deliver appropriate HIV prevention, care, and treatment [46, 47]. With differentiated service delivery [48], encounters with HIV prevention and care are occurring less at traditional health facilities, and more often in different venues within the community. Pharmacists, lay healthcare workers, and peers are becoming more important in improving outcomes in the HIV care cascade. Thus, meeting people where they engage in risk, with the intervention type and implementation style tailored to the setting, could be more effective at reducing HIV incidence.

Lastly, geo-social apps were influential in hook up culture, and this blurred geographic and spatial boundaries. Given the ubiquity of geo-social networking apps, geographic mobility was associated with sexual activity in interesting ways. According to a few participants, gay bars were being replaced by private "underground" places to engage in substance use and sexual activities. Different groups of people may interact with these apps [49], and the places that people interact may also be more diverse. These changes likely alter the geography of sexual networks and HIV transmission potential [50]. Past research has suggested that MSM using geo-social apps had higher rates of drug and alcohol use, and higher sexual behaviors implying HIV transmission compared with non-app using MSM [51]. Thus, combining past work on risk profiles of app-using MSM along with information about where men are meeting potential sexual partners can help tailor place-based HIV prevention messages and interventions.

Findings should be interpreted and generalized with caution, since our sample of 20 individuals was recruited from a larger study intended to recruit African American and Latinx MSM at high risk for HIV acquisition or secondary transmission and to understand interactions with substance use, and not from a representative sample of MSM in LAC. Thus, our results may be biased towards detecting connections between mobility and HIV risk in a group with known conditions of HIV and substance use disorder. However, it is also possible that mSTUDY respondents who we were able to recruit for our study were less at risk and thus able to respond. Nonetheless, identifying syndemic factors for HIV risk among the most vulnerable will help inform policy for whom it is most needed. This study was also specific to Los Angeles, which has unique spatial and social characteristics; thus, our findings may not be generalizable to other urban MSM populations. Lastly, qualitative research is an excellent way to generate scientific hypotheses. Our work lends support to the hypothesis that geographic mobility is part of a syndemic affecting HIV risk for MSM, but future work should test this hypothesis with a larger quantitative survey.

The places that people go and interact with others, along with the characteristics of those places, determine degrees of sexual health risk and concomitant prevention opportunities, like disrupting viral load or PrEP use. Additionally, individual behavior is often constrained or dictated by larger socio-ecological factors. For AA and Latinx MSM in LA, these socio-ecological factors are linked to structures of racism and worked together to create or maintain health disparities. Our work demonstrates important patterns of geographic mobility and risk among MSM in Los Angeles and supports evidence that interventions to reduce HIV incidence among MSM need to consider geographic mobility as a syndemic factor for HIV.

Acknowledgments We would like to thank Karina Jimenez, Jason Granados, Deanna Nash, Javier Rubio, Brandon Love, India Richter, Fiona Whelan, Marjan Javanbakht, Vince Pancucci, and the Los Angeles LGBT Center team for their immense help, support, and collaboration with this research.

Funding This work was funded in part by a UCSB Regents Junior Faculty Fellowship, a Programa de Investigacion en Migration Y Salud (PIMSA) award from the Health Initiatives of America, the National Institute of Drug Abuse (R21DA049643 and U01DA036267), and the National Institute of Mental Health (P30MH058107).

References

1. Centers for Disease Control and Prevention. *HIV Surveillance Report, 2018 (Updated).* Published May 2020.
2. Millett GA, Flores SA, Peterson JL, Bakeman R. Explaining disparities in HIV infection among black and white men who have sex with men: a meta-analysis of HIV risk behaviors. *Aids.* 2007;21(15):2083–91.
3. Garofalo R, Mustanski B, Johnson A, Emerson E. Exploring factors that underlie racial/ethnic disparities in HIV risk among young men who have sex with men. *J Urban Health*. 2010;87(2):318–23.
4. Baral S, Logie CH, Grosso A, Wirtz AL, Beyrer C. Modified social ecological model: a tool to guide the assessment of the risks and risk contexts of HIV epidemics. *BMC Public Health*. 2013;13:482.
5. Buot ML, Docena JP, Ratemo BK, et al. Beyond race and place: distal sociological determinants of HIV disparities. *PLoS One*. 2014;9(4):e91711.
6. Frye V, Latka MH, Koblin B, Halkitis PN, Putnam S, Galea S, et al. The urban environment and sexual risk behavior among men who have sex with men. *J Urban Health*. 2006;83(2):308–24.
7. Millett GA, Peterson JL, Flores SA, Hart TA, Jeffries WL 4th, Wilson PA, et al. Comparisons of disparities and risks of HIV infection in black and other men who have sex with men in Canada, UK, and USA: a meta-analysis. *Lancet.* 2012;380(9839):341–8.
8. Oster AM, Russell K, Wiegand RE, Valverde E, Forrest DW, Cribbin M, et al. HIV infection and testing among Latino men who have sex with men in the United States: the role of location of birth and other social determinants. *PLoS One*. 2013;8(9):e73779.
9. Maulsby C, Millett G, Lindsey K, Kelley R, Johnson K, Montoya D, et al. A systematic review of HIV interventions for black men who have sex with men (MSM). *BMC Public Health*. 2013;13:625.
10. Newcomb ME, Mustanski B. Racial differences in same-race partnering and the effects of sexual partnership characteristics on HIV risk in MSM: a prospective sexual diary study. *J Acquir Immune Defic Syndr*. 2013;62(3):329–33.
11. Clerkin EM, Newcomb ME, Mustanski B. Unpacking the racial disparity in HIV rates: the effect of race on risky sexual behavior among Black young men who have sex with men (YMSM). *J Behav Med*. 2011;34(4):237–43.
12. Feldman MB. A critical literature review to identify possible causes of higher rates of HIV infection among young black and Latino men who have sex with men. *J Natl Med Assoc*. 2010;102(12):1206–21.
13. Mustanski B, Birkett M, Kuhns LM, Latkin CA, Muth SQ. The role of geographic and network factors in racial disparities in HIV among young men who have sex with men: an egocentric network study. *AIDS Behav*. 2015;19(6):1037–47.
14. Mustanski B, Morgan E, D'Aquila R, Birkett M, Janulis P, Newcomb ME. Individual and network factors associated with racial disparities in HIV among young men who have sex with men: results from the RADAR cohort study. *J Acquir Immune Defic Syndr*. 2019;80(1):24–30.
15. Goodreau SM, Rosenberg ES, Jenness SM, Luisi N, Stansfield SE, Millett GA, et al. Sources of racial disparities in HIV prevalence in men who have sex with men in Atlanta, GA, USA: a modelling study. *Lancet HIV*. 2017;4(7):e311–20.
16. Lewis NM, Wilson K. HIV risk behaviours among immigrant and ethnic minority gay and bisexual men in North America and Europe: a systematic review. *Soc Sci Med*. 2017;179:115–28.
17. Lewis NM. Urban encounters and sexual health among gay and bisexual immigrant men: perspectives from the settlement and aids service sectors. *Geogr Rev*. 2016;106(2):235–56.
18. Dyer TP, Shoptaw S, Guadamuz TE, Plankey M, Kao U, Ostrow D, et al. Application of syndemic theory to black men who have sex with men in the Multicenter AIDS Cohort Study. *J Urban Health*. 2012;89(4):697–708.
19. Singer M, Clair S. Syndemics and public health: reconceptualizing disease in bio-social context. *Med Anthropol Q*. 2003;17(4):423–41.
20. Stall R, Mills TC, Williamson J, Hart T, Greenwood G, Paul J, et al. Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *Am J Public Health*. 2003;93(6):939–42.
21. Carey JW, Mejia R, Bingham T, Ciesielski C, Gelaude D, Herbst JH, et al. Drug use, high-risk sex behaviors, and increased risk for recent HIV infection among men who have sex with men in Chicago and Los Angeles. *AIDS Behav*. 2009;13(6):1084–96.
22. Walters SM, Braksmajer A, Coston B, et al. A syndemic model of exchange sex among HIV-positive men who have sex with men. *Arch Sex Behav.* 2020.
23. Shoptaw S. HIV positive gay men, MSM, and substance use: perspectives on HIV prevention. In: Wilton L, editor. *Understanding prevention for HIV positive gay men*. New York, NY: Springer; 2017.
24. Hoots. Updated data on linkage to human immunodeficiency virus care and antiretroviral treatment among men who have sex with men-20 cities, United States (Pg 808, Vol 216, 2017). *J Infect Dis*. 2017;216(7):922.
25. Bianchi FT, Reisen CA, Zea MC, Poppen PJ, Shedlin MG, Penha MM. The sexual experiences of Latino men who have sex with men who migrated to a gay epicentre in the USA. *Culture Health & Sexuality*. 2007;9(5):505–18.

26. Sanchez MA, Hernandez MT, Hanson JE, et al. The effect of migration on HIV high-risk behaviors among Mexican migrants. *Jaids-J Acq Imm Def*. 2012;61(5):610–7.
27. Kissinger P, Althoff M, Burton N, Schmidt N, Hembling J, Salinas O, et al. Prevalence, patterns and predictors of substance use among Latino migrant men in a new receiving community. *Drug Alcohol Depen*. 2013;133(3):814–24.
28. Kissinger P, Kovacs S, Anderson-Smits C, Schmidt N, Salinas O, Hembling J, et al. Patterns and predictors of HIV/STI risk among Latino migrant men in a new receiving community. *AIDS Behav*. 2012;16(1):199–213.
29. Shedlin MG, Decena CU, Oliver-Velez D. Initial acculturation and HIV risk among new Hispanic immigrants. *Journal of the National Medical Association*. 2005;97(7):32s–7s.
30. Kobrak P, Ponce R, Zielony R. New arrivals to New York City: vulnerability to HIV among urban migrant young gay men. *Arch Sex Behav*. 2015;44(7):2041–53.
31. Hermanstyne KA, Green HD Jr, Cook R, Tieu HV, Dyer TV, Hucks-Ortiz C, et al. Social network support and decreased risk of seroconversion in black MSM: results of the BROTHERS (HPTN 061) study. *J Acquir Immune Defic Syndr*. 2018;78(2):163–8.
32. Aldrich R. Homosexuality and the city: an historical overview. *Urban Stud*. 2004;41(9):1719–37.
33. Weston K. Get thee to a big city: sexual imaginary and the great gay migration. *Glq-a Journal of Lesbian and Gay Studies*. 1995;2(3):253–77.
34. Gates GJ, Newport F. *Special report: 3.4% of US adults identify as LGBT*. Washington, DC: Gallup; 2012.
35. American Community Survey. *County-to-county* migration flows: 2013–2017 ACS. 2019.
36. Migration Policy Institute. State Immigration Data Profiles. 2014.
37. Javanbakht M, Ragsdale A, Shoptaw S, Gorbach PM. Transactional sex among men who have sex with men: differences by substance use and HIV status. *J Urban Health*. 2018;
38. Fulcher JA, Shoptaw S, Makgoeng SB, Elliott J, Ibarrondo FJ, Ragsdale A, et al. Brief report: recent methamphetamine use is associated with increased rectal mucosal inflammatory cytokines, regardless of HIV-1 serostatus. *J Acquir Immune Defic Syndr*. 2018;78(1):119–23.
39. Okafor CN, Gorbach PM, Ragsdale A, Quinn B, Shoptaw S. Correlates of preexposure prophylaxis (PrEP) use among men who have sex with men (MSM) in Los Angeles, California. *J Urban Health*. 2017;94(5):710–5.
40. *ATLAS. ti Scientific Software Development GmbH* [computer program]. Version Version 8; 2019.
41. Amirkhanian YA. Social networks, sexual networks and HIV risk in men who have sex with men. *Current HIV/AIDS Reports*. 2014;11(1):81–92.
42. Saleh LD, van den Berg JJ, Chambers CS, Operario D. Social support, psychological vulnerability, and HIV risk among African American men who have sex with men. *Psychol Health*. 2016;31(5):549–64.
43. Dilley JW, McFarland W, Sullivan P, Discepola M. Psychosocial correlates of unprotected anal sex in a cohort of gay men attending an HIV-negative support group. *AIDS Educ Prev*. 1998;10(4):317–26.
44. Lee J, Cassels S. Immigrant integration, social support, and the sexual risk behaviors of men who have sex with men. *Arch Sex Behav*. 2020;34(4):282–95.
45. Koblin BA, Egan JE, Nandi V, et al. Congruence of home, social and sex neighborhoods among men who have sex with men, NYCM2M study. *J Urban Health*. 2016;
46. El-Sadr WM, Rabkin M, DeCock KM. Population health and individualized care in the global AIDS response: synergy or conflict? *AIDS*. 2016;30(14):2145–8.
47. Lazarus JV, Barton SE, Bernardino JI. Taking the long-view in a personalised approach to HIV care. *Lancet HIV*. 2017;4(11):e483–5.
48. Grimsrud A, Bygrave H, Doherty M, Ehrenkranz P, Ellman T, Ferris R, et al. Reimagining HIV service delivery: the role of differentiated care from prevention to suppression. *J Int AIDS Soc*. 2016;19(1):21484.
49. Salamanca P, Janulis P, Elliott M, Birkett M, Mustanski B, Phillips G 2nd. An investigation of racial and ethnic homophily on grindr among an ongoing cohort study of YMSM. *AIDS Behav*. 2018.
50. Gesink D, Wang S, Guimond T, Kimura L, Connell J, Salway T, et al. Conceptualizing geosexual archetypes: mapping the sexual travels and egocentric sexual networks of gay and bisexual men in Toronto, Canada. *Sex Transm Dis*. 2018;45(6):368–73.
51. Zou HC, Fan S. Characteristics of men who have sex with men who use smartphone Geosocial networking applications and implications for HIV interventions: a systematic review and meta-analysis. *Arch Sex Behav*. 2017;46(4):885–94.