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Social Capital And Health Services Utilization In Msm

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DEDICATION

To my Family

SOCIAL CAPITAL AND HEALTH SERVICES UTILIZATION IN MSM

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SOCIAL CAPITAL AND HEATH SERVICES UTILIZATION IN MSM

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While incidence of HIV has decreased overall and in most population subgroups, men who have sex with men (MSM) continue to remain at disproportional risk for new infection. In particular, MSM of color experience HIV incidence rates that continue to rise and represent the overwhelming majority of new cases each year. Evidence suggests greater risk among MSM may not be attributable primarily to individual behavioral level factors, but instead to structural and social environmental level factors such as access to health services. Access to health services represents a critical link in HIV and STI prevention, as health services provide serological testing and preventive treatments such as PrEP, along with access to therapies such as ART which can reduce viral load. It has been documented that MSM have reduced access to health services (include preventive health services), which manifest as a potential risk factor for increased transmission downstream because of the role health services play in prevention.

This dissertation investigates the relation between social capital and health services awareness and utilization among MSM, to being to elucidate the potential role the social environment can play for these important transmission-reducing outcomes. Aim 1 examines the relation between two different kinds of social capital, bonding social capital and bridging

social capital, with the outcomes of health services resource awareness and utilization of health services. Aim 2 investigates a potential effect modification, assessing the moderation of individual level social capital on the relation between community level social capital and health services awareness and utilization. Aim 3 is a systematic review covering characteristics of social network interventions for risk reduction in MSM and how these interventions are implemented.

For Aim 1, results indicated bridging social capital was significantly associated with the outcome of health venue awareness in the Chicago MSM community, while bonding social capital was significantly associated with both health venue awareness and utilization in the Houston site. Aim 2 results provided evidence suggesting a significant moderation effect from individual level social capital on the relation between community level social capital and health venue awareness in both study sites. Major trends observed from the systematic review on social network interventions (Aim 3) include lack of definitions for what constitutes a social network intervention, no established standards or best practices for network change agent determination, and lack of reporting for network outcomes, properties, and intervention characteristics.

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BACKGROUND

Public Health Significance

While progress has been made in understanding risk factors for human immunodeficiency virus (HIV) transmission, incidence rates remain at epidemic levels in vulnerable population subgroups. The group at highest risk is men who have sex with men (MSM), who constitute more than 67% of the over 1.2 million persons living with HIV in the US, and about 70% of new cases reported every year (around 26,200 new infections) (Centers for Disease Control and Prevention, 2017). While incidence is falling among most other demographic segments, MSM have experienced a 6% increased yearly diagnosis rate in the last decade (from 2004-2014), with MSM being 44 more times at risk for acquiring the infection than heterosexual men (Centers for Disease Control and Prevention, 2017; Hall et al., 2008). MSM of color (black and Hispanic) are particularly at risk and constitute 66% of all cases (Centers for Disease Control and Prevention, 2017). MSM are defined as male persons who engage in sexual activity with members of the same sex, regardless of how they personally identify themselves. Thus, MSM would not only include men identifying as gay, but men identifying has heterosexual or bisexual, but still engaging in sexual activity with other men.

Because of the disproportionate risk of infection and continued increase in incidence, it is critical that public health efforts continue attempting to reduce HIV transmission among MSM, given the serious nature of HIV and acquired immunodeficiency syndrome (AIDS) as autoimmune conditions that place a tremendous burden on the health of affected individuals and predispose them to risk for other opportunistic infections and for cancers. Additionally, HIV also affects quality of life and mental health, as individuals face stigma (defined as negative attitudes, beliefs, and feelings towards an individual because of real or perceived HIV status) and

discrimination (defined as any unfair or unjust treatment of an individual due to their real or perceived HIV status) that continue to be associated with the condition (DeCarlo & Ekstrand, 2016).

A great deal of prevention and behavioral research in this area has focused on point-of-encounter sexual behaviors including e.g. practicing of safe sex/condom use, sex with multiple partners, and disclosing status to sexual partners (Koblin et al., 2006; Valleroy et al., 2000). However, a seminal systematic review by Millett et al. (2006) on MSM of color indicated that for this population of MSM, hypotheses that these behaviors are the primary attributable causes of higher infection rates were not supported by evidence in the literature. Namely, the Millett et al. (2006) review concluded that evidence does not support that increased incidence of infection are due to: 1) higher rates and greater likelihood of engaging in unprotected sex (condom-less); 2) higher rates and greater likelihood of engaging in sex with multiple partners; and 3) greater likelihood of not disclosing serostatus to sexual partners. This review was supported by a subsequent systematic review conducted by Maulsby et al. (2014), which reached similar conclusions as the Millet et al. review. Because of the inability of these individual level factors and risky sexual behaviors to account for higher rates of infection in this population, both reviews outlined several areas with a need for more research, reflecting possible alternative hypotheses for the mechanism of increased risk of infections.

One of these identified areas is reduced access and utilization of health services by MSM, with the idea that health services provide HIV testing, as well offering other benefits important to prevention such as access to preventive measures like post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP). In this sense, using preventive health services may be a critical factor in slowing infection, as learning about a positive status is a powerful motivator for

decreasing high-risk sexual behaviors, as well as gaining access to medication and preventive measures which decrease viral load and the infection susceptibility period (i.e. managing the condition in way that reduces transmission to others). Despite the benefits of having access to and using health services, and also its potentially important role in prevention, evidence suggests that MSM, particularly African American and Hispanic MSM, may have less access and be less likely to utilize health services (Halkitis et al., 2003; Kass et al., 1999).

There is a growing body of evidence linking social capital to awareness, access, and utilization of health services, following from the idea that members in personal networks and/or communities provide facilitators for utilization, such as information/knowledge, behavioral norms, and social support (Pitkin Derose & Varda, 2009; Altschuler et al., 2004; Mohseni & Lindstrom, 2007). Social capital is a multidimensional concept which captures the social environment through representing the sum of resources, actual or virtual, that accrue to an individual or group by virtue of membership to social structures such as communities or personal social networks (Bourdieu, 1992). Researchers have hypothesized several pathways in which social capital could influence access to health services. One pathway involves the norms and beliefs embedded in close social networks (bonding social capital), where individuals that are part of these networks are more likely to have similar norms and beliefs. For example, Davey et al., (2007) found that drug users were more likely to seek drug treatment-related health services if members in their social networks were also in treatment and sought treatment more frequently. An alternative pathway involving network ties with heterophilous individuals from other social groups (bridging social capital), is that connections with these individuals will provide a greater diversity and influx of new information than that of a tighter network. Viladrich (2007) found

that individuals with more heterogeneous social networks tended to have access to a wider variety of types of health services.

The relationship between social capital and health services utilization and access, however, has not been well-investigated specifically in MSM populations. Additionally, there is debate in the field of social capital on conceptualization and measurement, with some defining it as a macro-level community resource (Putnam, 1995; Kawachi et al., 2008), while others operationalize it at the individual level through social resources accrued directly from personal social networks (Coleman, 2000; Lin, 2017).

Therefore, the motivations for this dissertation fall under two main areas: 1) to investigate the possible association of social capital with health services utilization in MSM; and 2) within the context of this public health issue to explore the role of different dimensions of social capital and their relationships to each other. Following from these overall goals, the three specific aims for this dissertation are as follows:

Aims and Hypotheses

Aim 1: To investigate the relative strength of the association between bonding social capital and bridging social capital with the outcomes of awareness of health services and their utilization.

Aim 1 Hypothesis: Bridging social capital will have a significant and stronger association to the outcomes of awareness and utilization of health services than will bonding social capital.

Aim 2: To investigate a potential moderated relation between community level social capital and the outcomes of healthcare utilization and awareness of available health services resources, with individual level social capital acting as the effect modifier (moderator).

Aim 2 Hypothesis: Individual level social capital moderates the relation between community level social capital and the health outcomes of healthcare utilization and awareness.

Aim 3: Conduct a systematic review characterizing social network interventions for sexual risk reduction in MSM and synthesize recommendations based on these findings.

Literature Review of Social Capital

Social capital, conceptualized as direct and indirect resources that are a by-product of social networks and social support systems amongst family, friends or community members has long been linked with health status (Kawachi et al., 1999; Kawachi et al., 2008). A wide range of studies have found associations between social capital and health in different contexts, from impacting rates of overall mortality (Kawachi et al., 1997; Lochner et al., 2003), to chance of engaging in specific risky health behaviors (e.g. adolescent drinking) (Boyce et al., 2008; Weitzman & Kawachi, 2000) to mental health benefits from sense of inclusion and community (McKenzie et al., 2002; Almedom, 2005).

While it is generally accepted that social capital and health may be in some way associated (Kawachi et al., 2008), much of the picture remains unclear. A clear theoretical framework of how social capital is exactly related to health has not been developed (Carpiano, 2006), and empirical studies define social capital in a wide variety of ways (Kawachi et al., 2004) and show varying effects with both positive and negative effects on health (Kawachi et al., 2008). Currently, three major issues exist at the intersection of social capital and public health research: 1) social capital as an individual versus community level resource; 2) varying definitions of individual social capital; 3) measurement of social capital.

Social capital as an individual versus community level resource

Conceptualization of social capital as an individual level resource versus community (group) level research has been highly debated. Social capital was originally conceived of by Putnam (1995) as a group level resource existing as a feature of whole communities, defined as

"a collective and non-exclusive good in that living in a high social capital area can be beneficial even for individuals with poor social connections, with 'spill over' benefits gained from living in a high social capital community." (Eriksson, 2011, p. 3). In other words, individuals can benefit from capital even though they did not help produce or own those resources. The classic example Putnam (originally a political scientist) uses for collective social capital as a higher group level construct are the benefits accrued from living in a democratic society. For example, an isolate, criminal, or someone with many negative ties may enjoy benefits of living in a democracy (e.g. stability and safety) even though they do not directly contribute to it (by voting, paying taxes, and/or other civic duties and contributions to the community) or may even contribute negative value (e.g. criminal activity). Within the context of social capital relating specifically to health, Kawachi and Berkman (2000) in their early work applied Putnam's concept of social capital to the health field defining it as a pure collective feature of the community to which an individual belongs. They postulated that collective social capital influences health by influencing behaviors, access to health services, and psychosocial processes.

In contrast, individual level social capital first conceptualized by Burt (1992) and Bourdieu (1992) involves 'the ability of actors to secure benefits by virtue of membership in social networks and other social structures." Thus, by belonging to social networks, individuals can secure certain benefits and resources that would not be possible in the absence of these networks. According to Bourdieu, inclusion in social networks is not something inherently possessed, and critically differs from collective capital in that the individual must make some source of resource investment (e.g. investing time and effort into maintaining a friendship) in the first place to seek, develop, and maintain connections in the social network (Putnam's conception allows for benefit without personal investment).

Currently, there is still discussion as to whether social capital is truly a group level or individual level construct. Researchers believe that both conceptualizations can co-exist, and are indeed separate constructs that can influence health in different ways (Song & Lin, 2009). A recent systematic review on studies of social capital and health found that studies conceptualizing social capital as an individual level resource tended to find significant associations with health status related outcomes (whether positive or negative), while studies using the community level of social capital tended to find weaker effects (Halpern, 2005).

Defining individual level social capital

Within the conceptualization of social capital as an individual resource, there is additionally lack of agreement on a generally accepted operationalization and measurement of the construct. As originally conceived, individual level social capital involved homophilous strong network ties, that is, strong ties within a network that strengthen common identities and function as a source of help and support among members (McPherson, Smith-Lovin, & Cook, 2001). Thus, reflecting the network concept of homophily, this type of social capital, can be conceptualized as *bonding capital*, involving close ties with others we see as similar to ourselves (Lin, 2017). Typically, bonding capital networks will thus consist of family members and close friends.

Gittel and Vidal (1998) separately defined capital in the converse direction, supported by the idea of the "strength of weak ties" in sociology (Granovetter, 1997). This type of social capital, referred to as *bridging capital,* involves heterophilous weak ties between people from different networks and of different attributes. Individuals with greater bridging capital may actually be less connected in the bonding capital sense and may be peripheral figures in their own networks, but this allows for greater interaction with other networks (facilitating the

exchange of new ideas, behaviors, and information), more network mobility with other networks, and being less entrenched in the norms of any particular network. Indeed while most of social capital research in health initially focused on the positive effects of bonding capital (e.g. having a family member being available as a role model for a positive health behavior), more recent research has indicated individuals with greater bridging capital (controlling for level of bonding capital) often may have better outcomes (Kim, Subramanian, & Kawachi, 2006). An example of this is that an individual embedded deeply in a network where members engage in negative health behaviors or have poor attitudes/norms towards health may be less susceptible to outside positive influences and alternatives, compared to a member on the periphery of this network (Smith & Christakis, 2008; Valente, 2010).

Szreter and Woolcock (2004) later introduced the concept of *linking capital*, which consists of vertical (between different social strata) ties specifically to individuals with power at upper levels of the social hierarchy or positions in valuable formal instructions. Examples include having a friend who is a physician (healthcare), a lawyer or police officer (legal), or a teacher or professor (education). Some researchers have conflated bridging capital and linking capital (Healy, 2002), arguing that linking capital is ultimately another form of accessing the resources of the networks of heterophilous individuals.

Beyond these different conceptualizations of individual level social capital, another issue is that social capital is often used interchangeably and/or in place of other constructs, including social support, social integration, and social influence (Dolfsma & Dannreuther, 2003; Foley & Edwards, 1997; Robison, Schmid, & Siles, 2002). Lin (2017) argues that without clear conceptual definition of these constructs and understanding of their relationship in causal sequence, the value and explanatory power of all are significantly diminished. He asserts that

social capital is distinct from these other constructs in that capital comes from a resource dimension, and that it uniquely captures the effect of structural network positions possessed by individuals' network members, which differs from individuals' own social participation (social integration), their network members assistance (social support), and equality, trust, and reciprocity between network members (Song & Lin, 2009). Song and Lin (2009) have demonstrated that social support and social capital have distinct and differential effects on health, while others argue that all social constructs generally (including social capital) lead to social support, which is the construct that is ultimately "experienced", or is perceived by the individual.

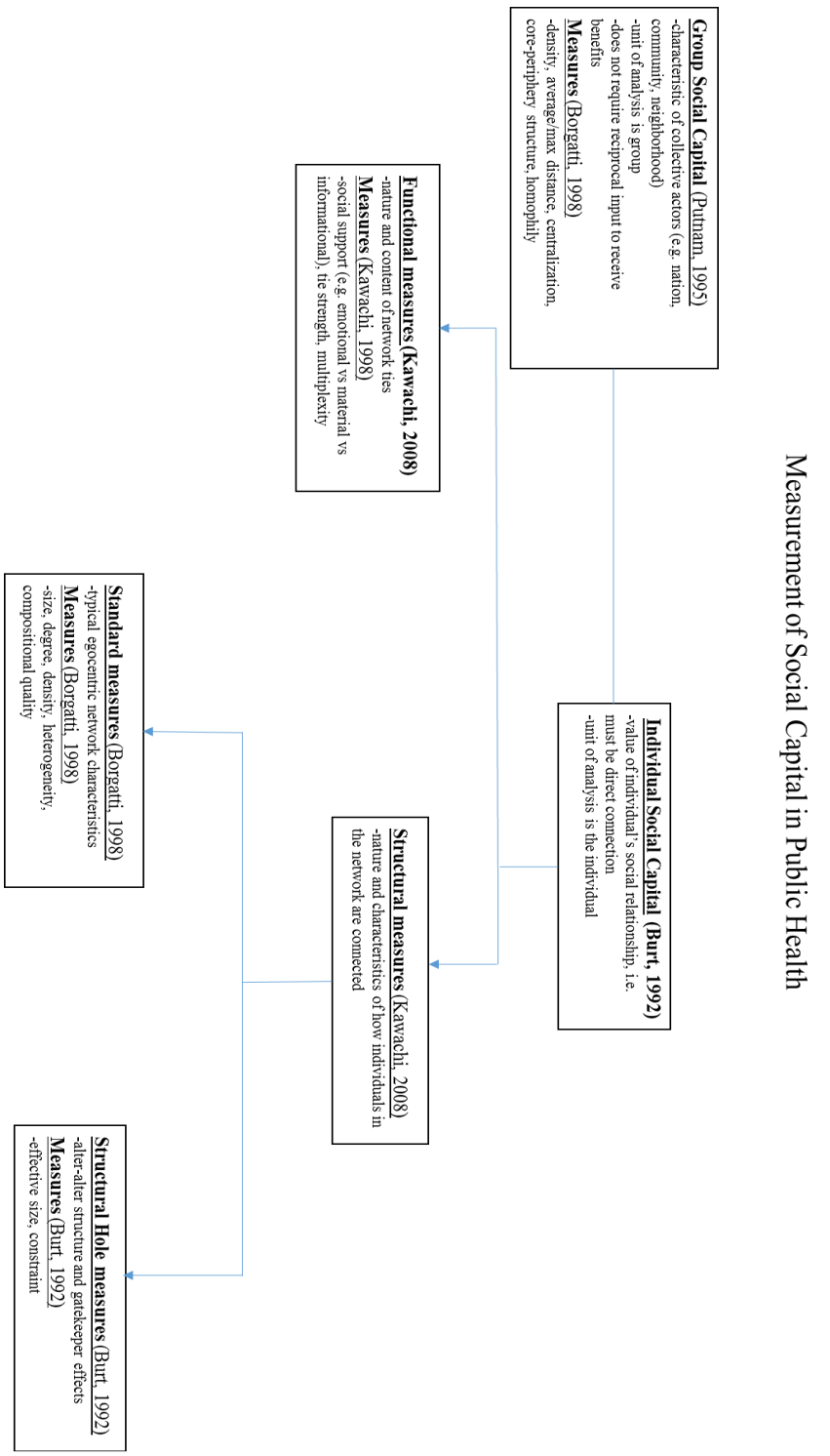
Measurement of social capital

Poor and/or imprecise definitions of an idea or concept inevitably mean that measurement of this concept will be imprecise as well. Because of the myriad ways in which social capital has been defined from individual versus collective level, to bridging versus bonding, each have been measured in different ways. Because of the pioneering influence of Putnam in first defining social capital, and early work of Kawachi and Berkman in bringing social capital to prominence in behavioral and public health, original measures of social capital were at the group level and most often involved items on the level of civic engagement, perceptions of community cohesion, and feelings of community belongingness. The commonality among these measures is that they all involved individual perception on an abstract concept of being part of a larger community.

The assertion that the unique distinguishing factor of social capital from other social constructs was that it incorporated network structural position, along with advancements in social network analysis methodology, led to a new paradigm of using empirically generated network statistics as measures of social capital (Borgatti, Jones, & Everett, 1998). Some common

measures within a framework depending on how social capital has been conceptualized in different contexts is presented in Figure 1.

Figure 1: Concepts and measures of social capital in public health



JOURNAL ARTICLE #1

The relative associations of bonding and bridging social capital to health services awareness and utilization among MSM in Chicago and Houston

Proposed Journal: AIDS and Behavior

Background

While rates of new infection for HIV have continued to drop in most demographic groups, incidence rates have climbed for men who have sex with men (MSM) (CDC, 2017). Traditional epidemiologic approaches focusing on individual level factors have established an important foundation for identifying factors of interest associated with HIV transmission in MSM. These studies possess some inherent limitations however, because transmission cannot be explained by individual factors alone and is a phenomenon that necessarily involves understanding the social environment (Schneider et al., 2013). Additionally, growing evidence suggests for MSM of color, previously popular hypotheses that individual level high-risk behaviors in MSM associated with sexual encounters (e.g. greater likelihood of engaging in unprotected sex and/or having multiple sex partners) do not explain the higher infection rates in this population (Millett et al., 2006; Maulsby et al., 2014).

One factor that has been hypothesized as a facilitator for higher risk of infection in MSM is reduced access and utilization of health services (Millett et al., 2006; Maulsby et al., 2014). Health services venues act as locations that MSM can access preventive resources and medication such as PEP and PrEP, and most importantly can be tested for disease status. In this manner, transmission of infection is slowed because not knowing one's own disease status can result in accidental transmission to many sex partners, while using the appropriate medication

(such as antiretroviral therapy) can decrease viral load and period of infectious susceptibility, decreasing the likelihood of transmission during sex.

Despite the benefits health service venues offer and their potential role in slowing transmission, evidence exists that MSM in general may be less likely to utilize these services and have overall less access (McKirnen et al., 2013; Halkitis et al., 2003; Kass et al., 1999). Most studies on factors influencing utilization of healthcare services have focused on stigma and discrimination due to sexual identity issues involving gender and sexual preference, or on other sources of stigma (e.g. race/ethnicity) particularly for black/Hispanic and lower SES MSM (Irvin et al., 2014). Beyond individual level and demographic factors and social factors related specifically to stigma, however, there is less understanding on how the social environment is related to utilization of health services by MSM.

The concept of social capital captures the social environment as the sum of resources, actual or virtual, that accrue to an individual or group by virtue of membership in social structures such as communities or personal social networks (Bourdieu, 1989). Research is mixed on the overall effects of social capital on a variety of health-related outcomes; some studies have shown positive effects in having high social capital, while other studies show negative effects as social capital may reinforce poor in-group norms, beliefs, and health behaviors (Kawachi et al., 2008, Halpern, 2005). For healthcare services, evidence generally suggests that having higher levels of social capital is associated with greater knowledge and awareness of services, along with greater utilization of preventive and primary care services and less utilization of emergency acute services (Pitkin Derose & Varda, 2009; Altschuler et al., 2004; Mohseni & Lindstrom, 2007). However, aside from a recent study by Zarwell et al. (2018) finding that MSM with higher community social capital are more likely to be aware of PrEP resources, there are

currently no studies that look at the relation between social capital and utilization of health services in specifically in MSM (sexual and social networks of MSM may be structured differently than those of other groups). Additionally, most studies that look at social capital treat it as a single uni-dimensional construct, whereas the current consensus among social capital researchers is that it is a multi-dimensional construct (Bertolini & Bravo, 2004; Stone, 2001).

In this study, we will focus on bonding social capital (involving homophilous relationships) and bridging social capital (involving heterophilous relationships), and investigate associations between these types social capital and awareness of health services resources, as well as utilization of health services. We hypothesize that a stronger association will exist in the relationship between bridging social capital and the outcomes of awareness of health services venues and utilization of health services, compared to the association between bonding social capital and outcomes of awareness of health services venues and utilization of health services. This is based on the intersection of social capital theory (Lin, 2002) and diffusion of innovations theory (Rogers, 2010), where having a greater diversity of network ties (higher bridging capital) may result in having more knowledge/information (awareness) and better norms (use) related to health services compared to an individual with a more insular and closed network.

Methods

This study was submitted for ethical review to the Committee for the Protection of Human Subjects (CPHS) at the University of Texas Health Science Center at Houston School of Public Health (HSC-SPH-18-0773). As a secondary data analysis of de-identified data from a previously approved study, it was declared exempt.

Parent Study

Data for this cross-sectional secondary analysis was obtained from the Young Men's Affiliation Project (YMAP), a prospective cohort study with a total of 729 individuals in Chicago, IL, and Houston, TX of risk and health venue affiliation networks and HIV risk and prevention among YMSM, using respondent driven sampling taking place between December 2014 and June 2016. Data collection occurred. YMAP is being conducted by the University of Texas Health Science Center at Houston School of Public Health and the University of Chicago (UC), Ann & Robert H. Lurie Children's Hospital of Chicago (Lurie) and received approval from the IRB at each site (Fujimoto et al., 2018).

Individuals were eligible to participate in YMAP if they were 16–29 years old, assigned male at birth and identify as male, reported having had oral or anal sex with another male in the past year, resided in the Chicago or Houston metro area, and were planning to remain in their residential area for the following year. Seed participants were identified by asking representatives from a young MSM-serving health (e.g., clinics, community-based organizations) and other social venues (e.g., bars, sports groups) and then asking them to invite up to four peers. For each successful "sprout," the referring participant received $20 (maximum of $80).

Participants were asked to schedule an appointment for their baseline interview, conducted either at the site office (for both Chicago and Houston) or at a centrally located MSM-serving community center (Houston only). At the baseline appointment, study staff checked each participant's photo ID and date of birth to help prevent duplicate enrollment and obtained signed consent/assent after an oral assessment of understanding. Using computer-assisted personal interviewing, study staff administered the survey, which comprised questions relating to sociodemographic characteristics; sexual and drug use behaviors; close social and recent sexual networks; and physical and virtual venues (i.e., organizations, businesses, social media, and

geosocial networking applications where young MSM socialize or receive social services) they visited in the previous 12 months. Study staff also conducted an HIV rapid test using site-specific procedures, and all reactive tests were confirmed using a lab-based algorithm. Participants were compensated $50 for the baseline interview and another $50 for a one-year follow-up interview.

Measures

Independent Variables

Bonding social capital: Bonding social capital involves close ties with others we see as similar to ourselves. Typically, bonding capital networks will thus consist of homophilous relationships with family members and close friends that will be more likely have similar demographic characteristics, norms, behaviors, or beliefs. Bonding social capital was measured using egocentric networks of each individual to aggregate ties from both social and sex networks, an approach commonly used by social capital researchers (Lakon, Godette, & Hipp, 2008). Network ties from the nominated social and sex networks summed as a measure of overall network size.

Bridging social capital: Bridging social capital involves connections to individuals who may have different attributes and characteristics, and may act as gateways to other social networks. A diversity of alters with a diversity of traits leads to the potential availability of a diversity of potential resources. Bridging social capital was measured using network statistics reflecting network heterogeneity. Heterogeneity conceptually refers to the diversity of alters in a network with respect to various attributes. If heterogeneity is high, this indicates an ego has alters that differ in a wide range from each other with respect to a particular attribute, which captures the concept of bridging capital in that that ego will have access to a greater diversity of network resources such as information. Therefore, Blau's index (also known as Herfindahl's index or

Hirschman's index), a common measure of ego-network heterogeneity will be used to measure bridging social capital (Perry, Pescosolido, & Borgatti, 2018).

$$H = 1 - \sum_k p_k^2$$

Blau's index is interpreted on a scale starting from 0 (perfect homogeneity, in the case that everyone in an ego's network was exactly the same) up to a value *k* (depending on the number of attribute categories being factored in) or 1, if the normalized Blau's index statistic is used. Blau's index was computed on the attribute of education level, a commonly used approach to capture access to the range non-redundant information and knowledge accessible to the ego (Galobardes et al., 2006). A high Blau's index score would indicate an ego has high network heterogeneity and therefore bridging capital, granting access to a greater diversity of information on potentially available resources compared to an ego with ties to highly homophilous individuals (Perry, Pescosolido, & Borgatti, 2018).

Dependent Variables

Awareness of health promoting venues: Health promoting venues are defined as locations that provide health services, social services, and/or general support services. Thus, we defined awareness of health promoting venues as awareness of specific health promoting venues in the local area provided in a roster by the study interviewer. This was assessed by the question: "Here are some places men go for social services, health services or other support services. Have you heard of...[Yes/No checklist of health promoting venues provided following this question stem]." The outcome variable for this is therefore a discrete variable that is the cumulative total of "Yes" responses for venues. If desired, this variable could be further broken down into awareness of specific types of health promoting venues (health services, social services, and/or general support services).

Utilization of health promoting venues: Health promoting venues are defined in the same manner as above, as are the venue options listed on the venue roster. Utilization was measured by the following items: "Recall the health and support locations you have been to. In the last 12 months have you been to ...[Yes/No checklist of health promoting venues provided following this question stem]" and "How often have you gone to [NAME OF HEALTH/SUPPORT LOCATION] in the past 12 months?" (responses from "every day" up to "once per year"). The outcome variables for this consists of an ordinal variable representing the sum of each type of response across each venue that is selected by the respondent as having visited.

Analysis

In this ego-network analysis, because the level of observation is at the ego level for the dependent variables of interest (e.g. the number of health venues participants were aware of and frequency of utilization of health services for the ego), multilevel models were not necessary. Data was assessed for violations of standard statistical assumptions such as nonlinearity, skewness (not normally distributed), and heteroscedasticity, as these may often be of concern in ego-centric network research. Certain ego-network statistics, particularly those relating to size characteristics are often positively skewed; skewness and nonlinearity may be addressed through variable transformations and additions of squared or cubed terms to the standard linear model (Perry, Pescosolido, & Borgatti, 2018; Lynch, 2007). Heteroscedasticity may be a problem for larger networks as standard errors may be biased (there may be systematic differences as participants with few alters may tend to recall alter information more accurately than those with many alters to recall) (Perry, Pescosolido, & Borgatti, 2018). Therefore, variance of the error term may not be constant, and error will be greater depending on the network. Heteroscedasticity

may be assessed using variance inflation factors and can be corrected using standard error adjustments if needed (Hayes & Cai, 2007).

Data analysis was conducted using STATA 15 and SPSS 25.0. Descriptive statistics were generated and compared between cities using *t*-tests for normally distributed continuous variables, Wilcoxon rank-sum tests for non-normal continuous variables, and $\chi 2$ tests for categorical variables. Variables were assessed for significant departure from normality using the Shapiro-Wilcoxson test with the gladder command. The primary outcome variables of interest (health services utilization and awareness of health service venues) were aggregated from tallies on a roster of possible health promoting venues, and treated as count variables. Therefore, multivariable Poisson regression models were used for each separate outcome variable, and for each city, with bridging and bonding social capital in addition to covariates (age, race/ethnicity, education, insurance status) regressed on health services venue awareness and health venue utilization. To optimize model fit and minimize overdispersion in the Poisson models, the robust variance estimate for regression was used. Beta coefficients generated from models were exponentiated in order to generate ratios for interpretation.

Results

Mean age was approximately 24 years in both Chicago and Houston (Table 1). The racial/ethnic composition of the sample differed between cities; notably, 18.8% of participants in Houston identified as Hispanic compared to 10.6% in Chicago. No significant differences were noted in education level, or social capital levels (for both bridging and bonding) between cities. Significant differences in access to insurance and health services were observed, with Houston (41.3%) having over twice as many participants uninsured compared to Chicago (20.2%). Generally, MSM in Houston (19.1) tended to be aware of a greater number of health services

venues compared to MSM in Chicago (10.9), as well as having more of mean visits (4.43 compared to 3.22) in the past year.

Table 2 and 3 display results for the multivariable regression models for Chicago for the outcomes of awareness of health venues and use of health venues (respectively). Age was a significant demographic predictor for both awareness and use of health venues, while education level (high school or less) was significant only for awareness. With regards to the primary predictor variables of interest (bonding and bridging social capital), controlling for other covariates, bridging social capital was significantly positively associated with the outcome of awareness of health venues (p=.029, 95% CI (1.03, 1.75)) at 1.34 times greater magnitude.

Tables 4 and 5 display results for the multivariable regression models for Houston for the outcomes of awareness of health venues and use of health venues (respectively). For health venue awareness, a number of demographic variables were significant, including age, racial/ethnic group, as well as education level (high school or less). Racial/ethnic categories were also significant predictors for health venue utilization.

For our primary predictors of interest (bonding and bridging social capital), bonding social capital was significantly positively associated for both awareness of number of health venues (p<.001, 95% CI (1.05, 1.09)) as well as utilization of health venues (p=.041, 95% CI (1.01, 1.10)), although in each case the effect size was quite modest (1.07x for awareness and 1.05x for utilization).

Discussion

This is the first study to explore the relative associations of both bonding and bridging social capital on awareness of health services resources (health promoting venues) and utilization of health services. In our study, there was evidence to support only one of our original

hypotheses, which was that bridging social capital would be the predictor significantly and more positively associated with these outcomes. This relation was observed in Chicago for health venue awareness, but in no other context. In fact, bonding social capital was both significantly and positively associated with awareness and utilization of health services in Houston (although the effect size was small ranging from 1.05x to 1.07x), while bridging social capital was not.

These findings suggest that the socio-environmental contexts unique to each of these cities may play differential roles in influencing the knowledge, norms of use, and behaviors relating to health services use in MSM populations. One possible explanation may be linked to the health venue-level environment, in that health services may be more integrated into fewer (but perhaps larger or more prominent) health promoting venues. Another factor may be that in Houston, the significantly higher uninsured status among MSM seeking (and therefore being more aware of) a larger number of venues in the hope of finding one that may serve the uninsured, compared to the more insured population in Chicago which may have less venue knowledge seeking behavior because they are restricted to the specific options they know their insurance allows access to. Lastly, this may simply reflect earlier social capital literature providing evidence for bonding social capital as the primary mechanism to reinforce positive health norms and behaviors (Kawachi, Subramanian, & Kim, 2008). Houston MSM had significantly higher venue awareness and utilization than Chicago MSM. Therefore, these higher inherent levels may have been additionally reinforced through bonding capital in personal ego-networks. Chicago MSM had significantly lower levels of awareness of health venues/resources, therefore, they may have benefited more from bridging social capital in that there is a higher potential level of benefit to be received from heterogeneity within their networks in terms of diffusion of knowledge of a greater variety of available health services.

Conclusions from this study should be considered keeping several limitations in mind. The study was cross-sectional in design, meaning that inferences cannot be truly ascertained in terms of causation. Additionally, the name generators of both the social and sex ego-networks were constrained, which places an artificial boundary on the network metrics used to calculate bridging and bonding social capital. The health promoting venue rosters used to generate counts for the primary outcomes of venue awareness and utilization were similarly truncated as a result of using a roster, although the venue rosters were much more comprehensive.

Despite limitations, this exploratory study provides a foundation for future studies to explore the relation between social capital and health services use and awareness, in addition to suggesting some basic implications for consideration in interventions focusing on increasing access to health services (e.g. preventative services like HIV testing and PrEP) as a means to reduce transmission. Because of the differential importance of each type of social capital in different contexts observed in this study (e.g. bridging in Chicago and bonding in Houston), this highlights the need for interventions leveraging the social environment to fully grasp the nature of the social environment before implementation. For example, an intervention that seeks to promote engaging with preventive health services through reinforcing positive norms among close friends and family may be more effective in a social context more similar to Houston, compared to Chicago.

Table 1: Sample characteristics of MSM in Chicago and Houston

	Chicago (N=377)	Houston (N=378)	
Characteristic			City difference (*p*)
Age (mean, SD, min-max)	24.3 (±2.8, 17-30)	24.8 (±2.9, 17-30)	.055
Race/Ethnicity			**.004***
Hispanic	10.6% (40)	18.8% (71)	
White (non-Hispanic)	19.9% (75)	15.1% (57)	
Black/African American)	63.9% (241)	60.1% (227)	
Other	5.60% (21)	6.10% (23)	
Education			.598
High school or less	37.9% (143)	37.0% (140)	
College or more	60.5% (228)	62.2% (235)	
Insurance Type			**<.001***
No insurance	20.2% (76)	41.3% (156)	
Public insurance	76.1% (287)	46.6% (176)	
Private insurance	3.70% (14)	11.4% (43)	
Social Capital			
Bonding social capital	6.22 (±3.24, 1-7)	6.55 (±1.21, 1-7)	. 095
Bridging social capital	0.53 (±0.22, 0-1)	0.52 (±.300, 0-1)	.234
Health Services Outcomes			
Awareness of health venues	10.9 (±6.88, 0-37)	19.1 (±12.6, 0-68)	**.032***
Use of Health Venues	3.22 (±3.25, 0-24)	5.27 (±4.43, 0-36)	**.047***

[1]Public insurance includes any of Medicaid, Medicare, CountyCare, Veterans Administration, and any insurance through public assistance. Private insurance includes work-based insurance, e.g. BCBS.

[2]Bonding social capital is comprised of non-overlapping summation of social and sexual egonet ties. Bridging social capital is Blau's Index of Heterogeneity proportion score.

[3]Significance set at .05 level

Table 2: Exponentiated beta coefficients for social capital and covariates with health venue awareness among MSM in Chicago

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	.947	.012	**<.001***	(.925, .969)
Race/Ethnicity				
Hispanic	1.05	.157	.757	.772, 1.43
White (non-Hispanic)	.794	.153	.133	(.588, 1.07)
Black/African American)	.998	.135	.988	(.767, 1.30)
Other	-	-	-	-
Education				
High school or less	1.19	.067	**.011***	(1.04, 1.35)
College or more	-	-	-	-
Insurance Type				
No insurance	1.32	.205	.173	(.885, 1.98)
Public insurance	1.28	.196	.207	(.872, 1.88)
Private insurance	-	-	-	-
Social Capital				
Bonding social capital	.968	.022	.141	(.927, 1.01)
Bridging social capital	1.34	.135	**.029***	(1.03, 1.75)

Table 3: Exponentiated beta coefficients for social capital and covariates with health venue utilization among MSM in Chicago

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	1.03	.020	**.006***	(.910, .984)
Race/Ethnicity				
Hispanic	1.70	.217	.823	(.686, 1.61)
White (non-Hispanic)	2.26	.204	.260	(.532, 1.19)
Black/African American)	1.49	.176	.991	(.706, 1.41)
Other	-	-	-	-
Education				
High school or less	.826	.120	.154	(.938, 1.50)
College or more	-	-	-	-
Insurance Type				
No insurance	.872	.285	.327	(.757, 2.31)
Public insurance	.894	.269	.358	(.756, 2.17)
Private insurance	-	-	-	-
Social Capital				
Bonding social capital	1.00	.036	.357	(.903, 1.04)
Bridging social capital	.876	.240	.216	(.841, 2.15)

Table 4: Exponentiated beta coefficients for social capital and covariates with health venue awareness among MSM in Houston

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	1.01	.006	**.023***	(1.01, 1.03)
Race/Ethnicity				
Hispanic	.831	.068	**.006***	(.727, .949)
White (non-Hispanic)	1.15	.065	**.035***	(1.01, 1.31)
Black/African American)	.775	.063	**<.001***	(.685, .877)
Other	-	-	-	-
Education				
High school or less	.867	.038	**<.001***	(.805, .933)
College or more	-	-	-	-
Insurance Type				
No insurance	.929	.058	.204	(.828, 1.04)
Public insurance	1.01	.056	.891	(.903, 1.12)
Private insurance	-	-	-	-
Social Capital				
Bonding social capital	1.07	.012	**<.001***	(1.05, 1.09)
Bridging social capital	.953	.053	.364	(.860, 1.06)

Table 5: Exponentiated beta coefficients for social capital and covariates with health venue utilization among MSM in Houston

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	.994	.012	.637	(.970, 1.02)
Race/Ethnicity				
Hispanic	.711	.133	**.010***	(.548, .922)
White (non-Hispanic)	.715	.133	**.012***	(.551, .929)
Black/African American)	.621	.123	**.001***	(.488, .790)
Other	-	-	-	-
Education				
High school or less	.997	.078	.966	(.855, 1.16)
College or more	-	-	-	-
Insurance Type				
No insurance	.999	.132	.996	(.772, 1.29)
Public insurance	.978	.129	.860	(.760, 1.26)
Private insurance	-	-	-	-
Social Capital				
Bonding social capital	1.05	.023	**.041***	(1.01, 1.10)
Bridging social capital	1.06	.113	.602	(.849, 1.33)

Aim 1 References

Altschuler, A., Somkin, C. P., & Adler, N. E. (2004). Local services and amenities, neighborhood social capital, and health. *Social Science & Medicine*, *59*(6), 1219-1229.

Bertolini, S., & Bravo, G. (2004). Social capital, a multidimensional concept. *<http://www. ex. ac. uk/shipss/politics/research/socialcapital/other/bertolini.pdf> Acesso Em*, *17*(10), 1-16.

Bourdieu, P. (1989). Social space and symbolic power. *Sociological Theory*, *7*(1), 14-25.

Centers for Disease Control and Prevention. (2017, November 29). *HIV surveillance report, 2016; vol. 28*. Retrieved from http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html

Fujimoto, K., Cao, M., Kuhns, L. M., Li, D., & Schneider, J. A. (2018). Statistical adjustment of network degree in respondent-driven sampling estimators: Venue attendance as a proxy for network size among young MSM. *Social Networks*, *54*, 118-131.

Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Indicators of socioeconomic position (part 1). *Journal of Epidemiology & Community Health*, *60*(1), 7-12.

Halkitis, P. N., Parsons, J. T., Wolitski, R. J., & Remien, R. H. (2003). Characteristics of HIV antiretroviral treatments, access and adherence in an ethnically diverse sample of men who have sex with men. *AIDS Care*, *15*(1), 89-102.

Halpern, D. (2005). *Social Capital*. Cambridge: Polity Press.

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods*, *39*(4), 709-722.

Irvin, R., Wilton, L., Scott, H., Beauchamp, G., Wang, L., Betancourt, J., ... & Buchbinder, S. (2014). A study of perceived racial discrimination in Black men who have sex with men (MSM) and its association with healthcare utilization and HIV testing. *AIDS and Behavior*, *18*(7), 1272-1278.

Kass, N., Flynn, C., Jacobson, L., Chmiel, J. S., & Bing, E. G. (1999). Effect of race on insurance coverage and health service use for HIV-infected gay men. *JAIDS and Human Retrovirology: Official Publication of the International Retrovirology Association*, *20*(1), 85-92.

Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health. In *Social Capital and Health* (pp. 1-26). Springer New York.

Lakon, C. M., Godette, D. C., & Hipp, J. R. (2008). Network-based approaches for measuring social capital. In *Social capital and health* (pp. 63-81). Springer, New York, NY.

Lin, N. (2002). *Social Capital: A Theory of Social Structure and Action* (Vol. 19). Cambridge University Press.

Lynch, S. M. (2007). *Introduction to Applied Bayesian Statistics and Estimation for Social Scientists*. Springer Science & Business Media.

Maulsby, C., Millett, G., Lindsey, K., Kelley, R., Johnson, K., Montoya, D., & Holtgrave, D. (2014). HIV among black men who have sex with men (MSM) in the United States: a review of the literature. *AIDS and Behavior*, *18*(1), 10-25.

McKirnan, D. J., Du Bois, S. N., Alvy, L. M., & Jones, K. (2013). Health care access and health behaviors among men who have sex with men: the cost of health disparities. *Health Education & Behavior*, *40*(1), 32-41.

Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of black men who have sex with men: a critical literature review. *American Journal of Public Health*, *96*(6), 1007-1019.

Mohseni, M., & Lindstrom, M. (2007). Social capital, trust in the health-care system and self-rated health: the role of access to health care in a population-based study. *Social Science & Medicine*, *64*(7), 1373-1383.

Perry, B. L., Pescosolido, B. A., & Borgatti, S. P. (2018). *Egocentric Network Analysis: Foundations, Methods, and Models*. Cambridge University Press.

Pitkin Derose, K., & Varda, D. M. (2009). Social capital and health care access: a systematic review. *Medical Care Research and Review*, *66*(3), 272-306.

Rogers, E. M. (2010). *Diffusion of Innovations*. Simon and Schuster.

Schneider, J. A., Cornwell, B., Ostrow, D., Michaels, S., Schumm, P., Laumann, E. O., & Friedman, S. (2013). Network mixing and network influences most linked to HIV infection and risk behavior in the HIV epidemic among black men who have sex with men. *American Journal of Public Health*, *103*(1), e28-e36.

Stone, W. (2001). Measuring social capital. *Research Papers: Australian Institute of Family Studies*, 24, 1-46.

Zarwell, M., Ransome, Y., Barak, N., Gruber, D., & Robinson, W. T. (2019). PrEP indicators, social capital and social group memberships among gay, bisexual and other men who have sex with men. *Culture, Health & Sexuality*, 1-18.

JOURNAL ARTICLE #2

Assessing the moderation of individual level social capital on the relation between community social capital and health services awareness and utilization among MSM in Chicago and Houston

Proposed Journal: Social Science & Medicine

Background

Social capital is broadly recognized as the sum of resources, actual or virtual, that accrue to an individual or group by virtue of membership to social structures such as communities or personal social networks (Bourdieu, 1989; Bourdieu & Wacquant, 1992). While the body of literature linking social capital to myriad health outcomes is steadily growing, the theoretical and empirical links between social capital and health remain unresolved. While we can say there appears to be some degree of relationship between health and social capital, there is no general consensus or theory on the nature and magnitude of this relationship or on specific mechanisms through which social capital affects health. Much of this uncertainty revolves around diverging perspectives in defining (and by extension measuring) social capital as a macro (community) versus micro (individual) level construct.

Kawachi and Berkman (2000), working largely in the context of looking at the relationship between social capital and health, have advocated for the definition of social capital to be reserved for ecological macro level phenomena, and have argued against the extension of the definition to include the more individual level concept of social capital as a function of personal social networks. Counter to this, drawing from Bourdieu's original conceptualization, other researchers including Portes, Edwards, and Foley basing on their work on social networks, have argued that social capital should be treated strictly as a more social-relational concept that

results as a function of individual membership in personal social networks rather than a macro-ecological feature of larger aggregate groups (Foley & Edwards, 1997).

Recently, it has been proposed that conceptualizations of social capital need not be mutually exclusive, and that social capital at both the micro and macro level may potentially operate independently and also together to influence health-related outcomes (Halpern, 2005). It may be possible that both conceptualizations can co-exist, and are indeed different dimensions that can influence health in different ways (Song & Lin, 2009). Empirical findings on the connection between average level of trust between strangers and community belongingness and health outcomes at the state and national level are difficult to account for without reference to a social capital at the macro level (Kawachi, Subramanian, & Kim, 2008; Kawachi et al., 1997). On the other hand, studies exploring the influence of social networks on individual level health and health behaviors clearly demonstrate the effects of social capital as a construct at the personal network level (Foley & Edwards, 1997). In addition, Halpern (2005) argues that larger ecological effects can be observed in smaller individual personal networks, while macro level ecological effects still require micro level explanatory accounts.

To this end, only a handful of studies have examined simultaneously the roles of both micro (individual network) level social capital and macro (community) level social capital on health outcomes. More research is needed to elucidate how social capital may be associated with higher or lower health-related outcomes, and specifically on how different characterizations of social capital can work together or separately towards these outcomes.

Within the context of healthcare utilization by MSM, this study investigates a potential pathway through which macro and micro level social capital may together be related to health through utilization of health services resources. Healthcare services are a cornerstone in public

health efforts focused on reducing incidence of HIV and other STDs, as they facilitate a lowering in the rate of new infections through providing knowledge of serostatus (through testing), general prevention (such as education and behavioral interventions), and treatment. However, evidence indicates that MSM, in particular, MSM of color, may have lower utilization rates of healthcare services and greater difficulty accessing healthcare services (Johnson et al., 2009). To date, the majority of studies investigating social capital as a predictor of healthcare utilization have looked at the association between individual social capital only and utilization outcomes, or community social capital only and outcomes. For example, a recent study by Zarwell et al. (2019) identified associations between community level social capital and awareness of PrEP resources among MSM in New Orleans, but did not factor in individual level social capital derived from social network data. Because the nature of how community and individual social capital were initially conceptualized as conflicting dimensions of the same construct, only a handful of recent studies have looked at both types of social capital for any health-related outcome at all, and none have looked at both in the context of healthcare utilization for MSM (Pitkin Derose & Varda, 2009).

Therefore, this study proposes to investigate a potential moderated relation between community level social capital and the outcomes of healthcare utilization and awareness of available health services resources, with individual level social capital acting as the effect modifier (moderator). Therefore, it is hypothesized that individual level social capital moderates the relation between community level social capital and the health outcomes of healthcare utilization and awareness. This is concordant with Halpern's (2005) theory of community and health, in that community social capital is moderated by individual social capital following from the idea that the effects of community level social capital on health have been generally observed to be weaker than the effects of individual types of social capital (i.e. social capital originating

from sources within an individual personal social network). However, individual social capital itself is ecologically determined from the overall community environment, that is, it is easier for an individual to cultivate and derive benefits from close and supportive personal social networks (reflecting sources of individual social capital) from a community they identify closely with, are more homophilous with, and have a higher degree of trust and belongingness towards. From an intervention standpoint, this study may inform the relative importance of targeting programs to build individual and/or community level social capital to increase access to preventive health services in vulnerable and/or underserved communities such as MSM. For example, if community level capital is important for health services utilization, interventions could incorporate capacity building strategies as a method for growing this resource.

Methods

This study was submitted for ethical review to the Committee for the Protection of Human Subjects (CPHS) at the University of Texas Health Science Center at Houston School of Public Health (HSC-SPH-18-0773). As this study was a secondary data analysis of previously collected data from an intuitional institutional review board (IRB) approved study, it was declared exempt from full review not falling under human subjects research.

Parent Study

Data for this cross-sectional secondary data analysis was obtained from the Young Men's Affiliation Project (YMAP), a prospective cohort study of risk and health venue affiliation networks and HIV risk and prevention among YMSM, using respondent driven sampling (RDS) taking place between December 2014 and June 2016. Data collection occurred with a total of 729 individuals in Chicago, IL, and Houston, TX. YMAP is being conducted by the University of Texas Health Science Center at Houston School of Public Health and the University of Chicago

(UC), Ann & Robert H. Lurie Children's Hospital of Chicago (Lurie) and received approval from the IRB at each site (Fujimoto et al., 2018).

Individuals were eligible to participate in YMAP if they were 16–29 years old, were assigned male at birth and identify as male, reported having had oral or anal sex with another male in the past year, resided in the Chicago or Houston metro area, and were planning to remain in their residential area for the following year. Seed participants were identified by asking representatives from YMSM-serving health (e.g., clinics, community-based organizations) and other social venues (e.g., bars, sports groups) and then asking them to invite up to four peers. For each successful "sprout," the referring participant received $20 (maximum of $80).

Eligible YMSM were asked to schedule an appointment for their baseline interview, conducted either at the site office (for both Chicago and Houston) or at a centrally located MSM-serving community center (Houston only). At the baseline appointment, study staff checked each participant's photo ID and date of birth to help prevent duplicate enrollment and obtained signed consent/assent after a verbal assessment of understanding. Using computer-assisted personal interviewing, study staff administered the survey, which comprised questions relating to sociodemographic characteristics; sexual and drug use behaviors; close social and recent sexual networks; and physical and virtual venues (i.e., organizations, businesses, social media, and geosocial networking applications where YMSM socialize or receive social services) they visited in the previous 12 months. Study staff also conducted an HIV rapid test using site-specific procedures, and all reactive tests were confirmed using a lab-based algorithm. Participants were compensated $50 for the baseline interview and another $50 for a one-year follow-up interview.

Measures

Independent Variables

Community level social capital: Community level social capital is defined as the benefits and resources accrued from belonging to or living in a particular community. Community capital is therefore a larger group level resource that is available to anyone existing in a particular community and doesn't require direct membership in social networks. We assessed community social capital using the following item: "How much do you feel a part of the neighborhood you live in?" (responses from "not at all part of" to "very much part of"), as a measure of the social capital and benefits derived from living in a particular geographic area. Belongingness queries have long been used as social capital measures, particularly in studies conceptualizing social capital as a group level resource (Kawachi, Subramanian, & Kim, 2008).

Separately, we also assessed a different type of community level social capital through the item "How much do you feel a part of the gay community? Would you say… (responses from "not at all part of" to "very much part of")." This item measures the social capital benefits accrued through membership of a community centered on homophily (others with similar characteristics) that is not artificially constrained by geographic boundaries at the neighborhood level. While it is apparent that living in a good neighborhood can convey advantages, so too can membership in other communities (e.g. religious or professional based communities as other examples) that are not location bound.

Individual level social capital: Individual level social capital is represented conceptually by the resources and benefits accrued through having members in close, personal social networks. Typically, these personal social networks consist of relationship ties with family members, friends, and partners. Therefore, we measured individual level social capital using the egocentric networks of individuals to aggregate each type of tie from the name generators used in the main

survey, an approach that has previously been applied by social network researchers to measure individual level social capital (Lin, 2002).

Dependent Variables (Outcomes)

Awareness of health promoting venues: Health promoting venues are defined as locations that provide health services, social services, and/or general support services. Thus, we defined awareness of health promoting venues as awareness of specific health promoting venues in the local area provided in a roster by the study interviewer. This was assessed by the question: "Here are some places men go for social services, health services or other support services. Have you heard of...[Yes/No checklist of health promoting venues provided following this question stem]." The outcome variable for this is therefore a discrete variable that is the cumulative total of "Yes" responses for venues. If desired, this variable could be further broken down into awareness of specific types of health promoting venues (health services, social services, and/or general support services).

Utilization of health promoting venues: Health promoting venues are defined in the same manner as above, as are the venue options listed on the venue roster. Utilization was measured by the following items: "Recall the health and support locations you have been to. In the last 12 months have you been to ...[Yes/No checklist of health promoting venues provided following this question stem]" and "How often have you gone to [NAME OF HEALTH/SUPPORT LOCATION] in the past 12 months?" (responses from "every day" up to "once per year"). The outcome variables for this consists of an ordinal variable representing the sum of each type of response across each venue that is selected by the respondent as having visited.

Analysis

Data analysis was conducted using SPSS 25.0 and STATA 15. Descriptive statistics were generated and compared between cities using *t*-tests for normally distributed continuous variables, Wilcoxon rank-sum tests for non-normal continuous variables, and $\chi 2$ tests for categorical variables. Variables were assessed for significant departure from normality using the Shapiro-Wilcoxson test with the gladder command. Because the primary outcome variables of interest (health services utilization and awareness of health service venues) were aggregated from tallies on a roster of possible health promoting venues, they were treated as count variables. Therefore, multivariable Poisson regression models were used for each separate outcome variable, and for each city, with bridging and bonding social capital in addition to covariates (age, race/ethnicity, education, insurance status) regressed on health services venue awareness and health venue utilization. Interaction terms were created for the hypothesized moderating relationships (through creating a new variable derived from the product of predictors and the moderator), and entered simultaneously into the models with associated main effect component terms and other covariates. Scores for each interaction component predictor term were centered, so that the individual main effects of component predictors are distinguishable from the interaction. Centered variables were computed from drawing the sample mean of each component main predictor separately, and then subtracting this mean from scores of the original variable. To optimize model fit and minimize overdispersion in the Poisson models, the robust variance estimate for regression was used. Beta coefficients generated from models were exponentiated in order to generate ratios for interpretation.

Results

Descriptive statistics for both samples are presented in Table 6. Mean age was approximately 24 years in both Chicago and Houston. The racial/ethnic composition of the

sample was significantly different between cities, with notably 18.8% participants identifying as Hispanic in Houston compared to 10.6% in Chicago. Significant differences in access to insurance and health services also were observed, with Houston (41.3%) having over double the number of participants uninsured compared to Chicago (20.2%). Generally, MSM in Houston (19.1) tended to be aware of a greater number of health services venues compared to MSM in Chicago (10.9), as well as having a greater number of mean visits (4.43 compared to 3.22). For social capital variables, there were no significant differences for individual social capital and gay community social capital, however, significant differences were observed for neighborhood level community social capital (2.53 in Chicago compared to 2.81 in Houston).

Tables 7 and 8 display the results of models assessing main and moderating effects of individual social capital on the relation between community social capital (at both the neighborhood community and gay community level) and health venue awareness and health venue utilization for Chicago. For awareness of health venues, gay community social capital was significantly associated (p=<.001, 95% CI (.612, .861)), while individual social capital approached significance (p=.051, 95% CI (.784, 1.00)). The interaction term (gay community social capital by individual social capital) representing the moderating effect of individual capital on the relation between gay community capital and health venue awareness was significant (p=.004, 95% CI (1.02, 1.11)). For health services utilization, no interaction terms were significant, although age and gay community social capital (p=.003, 95% CI (.488, .868)) were, while individual social capital was again marginally significant (p=.057, 95% CI (.660, 1.01)).

Tables 9 and 10 display the results of models assessing main and moderating effects of individual social capital on the relation between community social capital (at both the neighborhood community and gay community level) and health venue awareness and health

venue utilization for Houston. The interaction term of gay community social capital by individual social capital (representing the moderating effect of individual capital on the relation between gay community capital and health services use) was marginally significant (p=.052, 95% CI (.876, 1.00)). Individual social capital (p=.025, 95% CI (1.03, 1.48)) and education level (p=.048, 95% CI (.680, .999)) were additionally significantly associated with health venue awareness. No main effects or interaction effects were observed to be significant in the model for health venue utilization.

Discussion

To our knowledge, this was the first study to explore potential roles of both macro social capital (at the neighborhood community and gay community levels) and micro (individual) level social capital in terms of associations with awareness of health services resources and utilization of health services by MSM.

Significant and marginally significant effect modification was observed in both cities for individual community social capital moderating the relation between gay community social capital and awareness of health services resources. Both significant moderation effects were relatively small in effect size, but interestingly, were observed to be in opposing directions between the different cities. In Chicago, the moderation was in the positive direction, meaning that MSM with higher levels of individual social capital derived a greater benefit from gay community social capital in terms of knowledge of health services resources. This means that there is evidence to suggest compared to those with smaller individual social networks, MSM in Chicago with larger networks were able to leverage membership in the larger gay community into more knowledge on available health services resources.

Conversely, in Houston, the moderation effect was observed to have opposing directionality, meaning that Houston MSM who had higher levels of individual social capital experienced a weaker association between gay community social capital and knowledge of health venues. This can be interpreted as evidence to suggest for Houston MSM, compared to those with smaller individual social networks, those with larger networks actually tended to be less aware of health services resources through the larger gay community. Also of note is that in both cities, for main effects, only individual and/or gay community social capital effects were statistically significant. None of the cases demonstrated neighborhood level social capital as having a statistically significant association with outcomes, which converges findings of similar studies looking at the effects of neighborhoods on gay communities (Kelly et al., 2012; Fujimoto et al., 2017).

These differing results are likely an artifact of the unique social and structural environments native to Houston and Chicago, which were also observed in Paper 1 (with regards to person networks) and elsewhere (Fujimoto et al., 2018). The association of community social capital with awareness of health services in Chicago converges with Zarwell et al.'s (2019; 2019) research in New Orleans suggesting that MSM with higher community capital are more aware of the health services resources available to them. One possible explanation for this is similarities in the socio-structural fabric in New Orleans and Chicago reflected in the stronger sense of gay community observed in Chicago compare to Houston. This may be a result of more tightly knit gay enclaves that developed as a result of stricter zoning and city policies relating to housing and venues popular among MSM. Chicago's historic Boystown neighborhood (the first officially recognized gay village in the US) arose as a result of zoning and rent protection policies (Orne, 2017), while similarly tightly knit gay enclaves have developed in New Orleans as a result of

comprehensive zoning ordinances implemented during the rebuild following Hurricane Katrina strictly regulating the locations of clubs, bars, and sex shops (City of New Orleans, 2019). Although Houston has gay neighborhoods in more (comparatively) larger spread areas such as Montrose, these may be less tightly focused due to respectively less restrictive city policies.

The opposing moderation effect observed among Houston MSM may be in part explained by the finding in Paper 1 that Houston MSM rely on bonding social capital for health services information. Therefore, it would make sense that MSM in this population don't rely on leveraging their immediate personal networks to access the overall larger gay community for health information, instead, continuing to rely directly on their close personal networks for this information. Houston MSM also had a significantly higher baseline level of awareness of health venues (see Table 6), therefore, this may potentially be associated with less health services information seeking behavior.

Conclusions from this study should be considered keeping several limitations in mind. The study was cross-sectional in design, meaning that cause and effect relationships cannot be truly ascertained. Additionally, the name generators of social networks were constrained, which places an artificial boundary in deriving individual social capital. Community social capital was assessed through self-report single item measures, and future studies can benefit from using a more comprehensive community social capital measure that has been validated among MSM (Zarwell & Robinson, 2018; Onyx & Bullen, 2000). Individual social capital may be more accurately derived from networks generated from novel methods such as those described by Schneider, Zhou, and Laumann (2015) utilizing SIM card data from mobile phones to generate natural communication-based networks.

Although not causational, findings from this exploratory study provide several implications for public health interventions focused on reducing HIV/STI transmission among MSM through increasing awareness/use of preventive health services and thereby access to testing and PrEP. For example, our results suggest that neighborhood capital alone was not significantly associated with health services-related outcome in any context, therefore, interventions should work specifically with the gay community to leverage the strength of networks in this specific setting rather than relying on neighborhood-based programs. Additionally, evidence suggests that depending on the social context, some may get health information though the larger community, while others may tend to receive information more through close personal relationships. In the former, induction or alteration interventions that seek to build community ties may be more effective than in contexts where the latter holds true (Valente, 2012). In either case, an effort to understand the socio-structural environment before implementation will be critical to intervention efficacy downstream.

Table 6: Sample characteristics of MSM in Chicago and Houston

	Chicago (N=377)	Houston (N=378)	
Characteristic			City difference (*p*)[3]
Age (mean, SD, min-max)	24.3 (±2.8, 17-31)	24.8 (±2.9, 17-31)	.055
Race/Ethnicity			**.004***
Hispanic	10.6% (40)	18.8% (71)	
White (non-Hispanic)	19.9% (75)	15.1% (57)	
Black/African American)	63.9% (241)	60.1% (227)	
Other	5.60% (21)	6.10% (23)	
Education			.598
High school or less	37.9% (143)	37.0% (140)	
College or more	60.5% (228)	62.2% (235)	
Insurance Type[1]			**<.001***
No insurance	20.2% (76)	41.3% (156)	
Public insurance	76.1% (287)	46.6% (176)	
Private insurance	3.70% (14)	11.4% (43)	
Social Capital[2]			
Individual social capital	6.22 (±3.24, 1-7)	6.55 (±1.21, 1-7)	. 095
Neighborhood community social capital	2.53 (±1.08, 0-4)	2.81 (±1.04, 0-4)	**.001***
Gay community social capital	1.81 (±.80, 0-4)	1.91 (±.87, 0-4)	.093
Health Services Outcomes			
Awareness of health venues	10.9 (±6.88, 0-37)	19.1 (±12.6, 0-68)	**.032***
Use of Health Venues	3.22 (±3.25, 0-24)	5.27 (±4.43, 0-36)	**.047***

[1]Public insurance includes any of Medicaid, Medicare, CountyCare, Veterans Administration, and any insurance through public assistance. Private insurance includes work-based insurance, e.g. BCBS.
[2]Bonding social capital is comprised of the summation of social and sexual egonet ties. Bridging social capital is Blau's Index of Heterogeneity proportion score.
[3]Significance set at .05 level

Table 7: Exponentiated beta coefficients for covariates and interaction terms for assessing moderation of individual social capital on community social capital and health venue awareness among MSM in Chicago

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	1.00	.013	.958	(.976, 1.03)
Race/Ethnicity				
Hispanic	1.17	.143	.276	(.883, 1.55)
White (non-Hispanic)	.985	.115	.893	(.786, 1.23)
Black/African American)	1.06	.100	.590	(.867, 1.28)
Other	-	-	-	-
Education				
High school or less	.978	.075	.772	(.844, 1.13)
College or more	-	-	-	-
Insurance Type				
No insurance	1.17	.192	.413	(.803, 1.71)
Public insurance	1.18	.179	.348	(.833, 1.68)
Private insurance	-	-	-	-
Social Capital				
Neighborhood community social capital	1.054	.065	.422	(.927, 1.20)
Gay community social capital	.726	.087	**<.001***	(.612, .861)
Individual social capital	.886	.062	**.051****	.784, 1.00
Interaction Terms				
Neighborhood by individual	.997	.019	.870	(.960, 1.04)
Gay by individual community	1.065	.022	**.004***	(1.02, 1.11)

** indicates marginal significance at the alpha .05 level

Table 8: Exponentiated beta coefficients for covariates and interaction terms for assessing moderation of individual social capital on community social capital and health venue utilization among MSM in Chicago

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	.959	.019	**.026***	(.923, .995)
Race/Ethnicity				
Hispanic	.999	.214	.998	(.657, 1.52)
White (non-Hispanic)	.686	.210	.072	(.455, 1.04)
Black/African American)	.961	.180	.825	(.677, 1.37)
Other	-	-	-	-
Education				
High school or less	1.17	.118	.184	(.928, 1.48)
College or more	-	-	-	-
Insurance Type				
No insurance	1.17	.265	.545	(.698, 1.97)
Public insurance	1.21	.248	.449	(.742, 1.96)
Private insurance	-	-	-	-
Social Capital				
Neighborhood community social capital	.930	.109	.506	(.751, 1.15)
Gay community social capital	.650	.147	**.003***	(.488, .868)
Individual social capital	.930	.107	**.057****	(.660, 1.01)
Interaction Terms				
Neighborhood by individual	1.05	.033	.121	(.987, 1.12)
Gay by individual community	1.03	.044	.462	(.948, 1.12)

** indicates marginal significance at the alpha .05 level

Table 9: Exponentiated beta coefficients for covariates and interaction terms for assessing moderation of individual social capital on community social capital and health venue awareness among MSM in Houston

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	1.01	.016	.652	(.977, 1.04)
Race/Ethnicity				
Hispanic	.856	.173	.370	(.609, 1.20)
White (non-Hispanic)	1.18	.164	.307	(.857, 1.63)
Black/African American)	.830	.156	.231	(.612, 1.13)
Other	-	-	-	-
Education				
High school or less	.824	.098	**.048***	(.680, .999)
College or more	-	-	-	-
Insurance Type				
No insurance	.952	.156	.752	(.701, 1.29)
Public insurance	.990	.152	.948	(.736, 1.33)
Private insurance	-	-	-	-
Social Capital				
Neighborhood community social capital	1.07	.070	.368	(.928, 1.22)
Gay community social capital	.964	.089	.684	(.809, 1.15)
Individual social capital	1.23	.093	**.025***	(1.03, 1.48)
Interaction Terms				
Neighborhood by individual	.982	.030	.540	(.925, 1.04)
Gay by individual community	.936	.034	**.052****	(.876, 1.00)

** indicates marginal significance at the alpha .05 level

Table 10: Exponentiated beta coefficients for covariates and interaction terms for assessing moderation of individual social capital on community social capital and health venue utilization among MSM in Houston

Variable	Exp(*B*)	*SE*	*p*	95% CI
Age	.988	.021	.555	(.947, 1.03)
Race/Ethnicity				
Hispanic	.796	.277	.410	(.463, 1.37)
White (non-Hispanic)	.776	.290	.379	(.440, 1.37)
Black/African American)	.728	.281	.258	(.420, 1.26)
Other	-	-	-	-
Education				
High school or less	.933	.135	.608	(.716, 1.22)
College or more	-	-	-	-
Insurance Type				
No insurance	1.06	.241	.807	(.661, 1.70)
Public insurance	1.02	.239	.941	(.637, 1.63)
Private insurance	-	-	-	-
Social Capital				
Neighborhood community social capital	1.09	.110	.448	(.876, 1.35)
Gay community social capital	.821	.143	.168	(.621, 1.09)
Individual social capital	1.24	.161	.184	(.903, 1.70)
Interaction Terms				
Neighborhood by individual	.948	.051	.297	(.857, 1.05)
Gay by individual community	.975	.054	.646	(.877, 1.09)

** indicates marginal significance at the alpha .05 level

Aim 2 References

Bourdieu, P. (1989). Social space and symbolic power. *Sociological Theory*, *7*(1), 14-25.

Bourdieu, P., & Wacquant, L. (1992). *Réponses* (Vol. 4). Paris: Seuil.

City of New Orleans City Planning Commission. (2019, April 15). Comprehensive zoning ordinance. Retrieved from https://www.nola.gov/city-planning/czo/

Foley, M. W., & Edwards, B. (1997). Editors' introduction: Escape from politics? *Social theory and the social capital debate*. 550-561.

Fujimoto, K., Cao, M., Kuhns, L. M., Li, D., & Schneider, J. A. (2018). Statistical adjustment of network degree in respondent-driven sampling estimators: Venue attendance as a proxy for network size among young MSM. *Social Networks*, *54*, 118-131.

Fujimoto, K., Turner, R., Kuhns, L. M., Kim, J. Y., Zhao, J., & Schneider, J. A. (2017). Network centrality and geographical concentration of social and service venues that serve young men who have sex with men. *AIDS and Behavior*, *21*(12), 3578-3589.

Halpern, D. (2005). *Social Capital*. Cambridge: Polity Press.

Johnson, C. V., Mimiaga, M. J., Reisner, S. L., Tetu, A. M., Cranston, K., Bertrand, T., ... & Mayer, K. H. (2009). Health care access and sexually transmitted infection screening frequency among at-risk Massachusetts men who have sex with men. *American Journal of Public Health*, *99*(S1), S187-S192.

Kawachi, I., & Berkman, L. (2000). Social cohesion, social capital, and health. *Social Epidemiology*, *174*, 190.

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health*, *87*(9), 1491-1498.

Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health. In *Social Capital and Health* (pp. 1-26). Springer New York.

Kelly, B. C., Carpiano, R. M., Easterbrook, A., & Parsons, J. T. (2012). Sex and the community: the implications of neighbourhoods and social networks for sexual risk behaviours among urban gay men. *Sociology of Health & Illness*, *34*(7), 1085-1102.

Lin, N. (2002). *Social capital: A theory of social structure and action* (Vol. 19). Cambridge University Press.

Onyx, J., & Bullen, P. (2000). Measuring social capital in five communities. *The Journal of Applied Behavioral Science*, *36*(1), 23-42.

Orne, J. (2017). *Boystown: Sex and Community in Chicago*. University of Chicago Press.

Pitkin Derose, K., & Varda, D. M. (2009). Social capital and health care access: a systematic review. *Medical Care Research and Review*, *66*(3), 272-306.

Schneider, J. A., Zhou, A. N., & Laumann, E. O. (2015). A new HIV prevention network approach: sociometric peer change agent selection. *Social Science & Medicine*, *125*, 192-202.

Song, L., & Lin, N. (2009). Social capital and health inequality: evidence from Taiwan. *Journal of Health and Social Behavior*, *50*(2), 149-163.

Valente, T. W. (2012). Network interventions. *Science*, *337*(6090), 49-53.

Zarwell, M., Ransome, Y., Barak, N., Gruber, D., & Robinson, W. T. (2019). PrEP indicators, social capital and social group memberships among gay, bisexual and other men who have sex with men. *Culture, Health & Sexuality*, 1-18.

Zarwell, M., & Robinson, W. T. (2019). Network Properties Among Gay, Bisexual and Other Men Who Have Sex with Men Vary by Race. *AIDS and Behavior*, 1-11.

JOURNAL ARTICLE #3

Systematic review of social network intervention implementation methods and characteristics for sexual risk reduction in MSM

Proposed Journal: American Journal of Public Health

Background

Social network interventions to prevent the transmission of HIV and other STIs are gaining increasing attention and are a potentially powerful approach to address this complex public health issue. These interventions seek to change aspects of the social environment in order to facilitate more positive behavioral choices, most often through targeting social networks (e.g. creating new ties to positive network members and identifying key opinion leaders in networks).

Earlier systematic reviews and meta-analyses have included both individual and social network-based interventions for populations including school-aged youth, MSM, and injecting drug users, but few social network interventions could be found nearly 20 years ago (e.g., Mullen et al., 2002; Harawa et al., 2018; Lyles et al., 2007). Recently, two systematic reviews (in which meta-analyses were not conducted) have summarized the effects of social network interventions in more general public health settings (Latkin & Knowlton, 2007; Shelton et al., 2018), but not specifically for STI transmission prevention and in MSM.

Additionally, Wang et al. (2011) published a systemic review on social network interventions, focusing specifically on condom promotion interventions in heterosexual partner networks and highlighting the potential utility of network interventions in prevention of disease transmission. Although the Wang et al. review was the first to assess the effect of network approaches as a mechanism of intervention in the area of sexual health and prevention, it did so within the context of heterosexual partner networks, whereas risk of STI transmission

(particularly HIV) is greater in MSM populations and associated with different factors. Additionally, the review only includes network interventions focusing on condom use behaviors, and does not include network interventions involving other important behaviors associated with risk reduction including communicating sexual history with partners and negotiating safe sex, avoiding risky encounters, alcohol use in situations where high risk encounters are likely to take place, injection drug use, PrEP uptake, and HIV testing. Another important distinction is that sexual network structures of MSM may different from heterosexual networks, such that different intervention strategies may have been employed depending on the priority population. Methodologically, there were limitations in that study quality was not assessed or reported, no consistent criteria were used to define whether a study counted as a network intervention, and finally, issues with heterogeneity of outcome measures of condom use leading to potential underestimates of effects in six of the 11 reported studies.

Additionally, the reviews described above focus primarily on efficacy and outcomes of social network interventions, and do not focus deeply on characteristics of the actual interventions or on implementation methods. Based on a search of major databases and review registries, there has not been a systemic review either published or registered on the implementation and characteristics of social network interventions focused on prevention of STI transmission in MSM populations.

The purpose of this systematic review will be to therefore identify and describe the characteristics and implementation of transmission prevention interventions specifically in MSM populations that use a social network strategy. A typological framework (Valente, 2012) will be applied to guide the description of implementation methods and intervention characteristics, and

observed trends will be used to develop recommendations for best practices in network interventions for this population.

Methods

Protocol and Registration

This systematic review follows reporting guidelines set forth by PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Moher et al., 2009) and was registered with PROSPERO at https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=65321 (registration number: CRD42018065321).

Eligibility Criteria

Eligibility criteria were determined *a priori,* and required studies to be focused on primary studies of evaluation of social network interventions for STI transmission prevention with an MSM population. MSM were defined as men who engage in any form of sexual activity with same sex, regardless of their identification. Therefore, this includes homosexual/gay men, but does not exclude men who identify as heterosexual or bisexual. Besides being MSM, the population was not limited by race/ethnicity, or age. We did not restrict publication dates or have geographic restrictions. Study types were not limited to RCTs and could include quasi-experimental studies and studies without control groups. We did restrict studies to English language research articles appearing in peer reviewed journals.

Information Sources

We used the databases of *Medline* (Ovid) (1946-Present), *PubMed* (NLM) (1975-Present), and *PsycINFO* (1927-Present). The last search was run 8 August 2018.

Search

Search concepts were developed with the guidance of an experienced health sciences librarian. These included health promotion interventions, STI transmission prevention, social networks, and MSM. A combination of MeSH terms and title, abstract, and keywords were used to develop the initial *Medline* search and then adapted for searches of the other databases (Appendix B). *RefWorks* (ProQuest) was used to manage all citations found in the search process and to check for potential duplicates, a process involving comparing both exact and duplicates. We tracked search strategies and results using an Excel workbook designed specifically for systematic reviews (VonVille, 2015).

Study Selection

Prior to the main screening phase, two reviewers (ET and another PhD student in Health Promotion and Behavioral Sciences) using the Excel workbooks independently screened a random sample of 25 titles and abstracts and subsequently clarified the eligibility criteria. They then screened all titles and abstracts blinded to author names and journal titles. Disagreements were settled by consensus. Studies meeting eligibility criteria underwent independent full-text review by the same reviewers.

Data Collection Process

Each study was coded by the same two reviewers working independently using a standardized coding form with instructions and definitions (Appendix D and Appendix E) that was initially pilot-tested using a random sample of three studies. Disagreements were resolved by consensus and the coding form was revised with PDM.

Data Items

Data elements of interest included citation information (RefWorks study ID, name of coder, publication date, author, type of report, number of studies reported in citation), study level

information (study ID, number of citations reporting the study, sponsor, study design, study location, enrollment years, type of disease, recruitment methods, recruitment setting, control or comparison group treatment, sample size of control/comparison group, group assignment method, bias minimization method, cluster unit description, cluster matching procedure, sample age, sample race/ethnicity, sample SES, number of exposure/treatment groups), intervention level information (intervention group ID, sample size of intervention arm, type of network intervention, setting of intervention, deliverer of intervention, timespan of intervention, intervention session dose, network mapping of intervention, network mapping strategy, measurement times), and measurement level (psychosocial outcomes, behavioral outcomes, social network outcomes).

Risk of Bias

Generalizability and risk of bias factors related to the study design and sample were also extracted. Studies were evaluated for scientific and methodological rigor and quality using AMSTAR2 (A MeaSurement Tool to Assess systematic Reviews) found in Appendix C (Shea et al., 2017).

Interventions described in each study were categorized by social network intervention strategy using the typology established by Valente (2012) (Table 11). In specifying intervention types for this systematic review, it was possible for multiple social network intervention strategies to apply to a single intervention (e.g. a network intervention could incorporate elements of both “identification” approach and “induction” approaches).

Table 11: Valente social network intervention typology (Valente, 2012)

Intervention Strategy	Definition	Example
Identification	Intervention relies on identifying a "node" based on some network property. Nodes may be chosen due to characteristics such as network centrality or bridging potential.	Most common example includes "Opinion Leader" or "Peer Leader" interventions.
Segmentation	Segmentation: intervention is directed to groups of individuals. Segmentation interventions identify and expect a whole group to adopt something new at the same time.	Intervention locates groups of densely connected nodes, e.g. distributing measles vaccines to clusters of unvaccinated individuals.
Induction	Excitation of the network occurs such that novel interaction between individuals are activated. These intervention stimulate or force peer-to-peer interactions to create cascades of behavioral/information diffusion.	Word-of-mouth interventions (using social media) or snowball interventions where people recruit others within individual social networks.
Alteration	Intervention that change the network through add/deleting nodes, adding/deleting links, re-wiring existing links.	Removing certain nodes in sexual contact networks or introducing a new node such as an AA program.

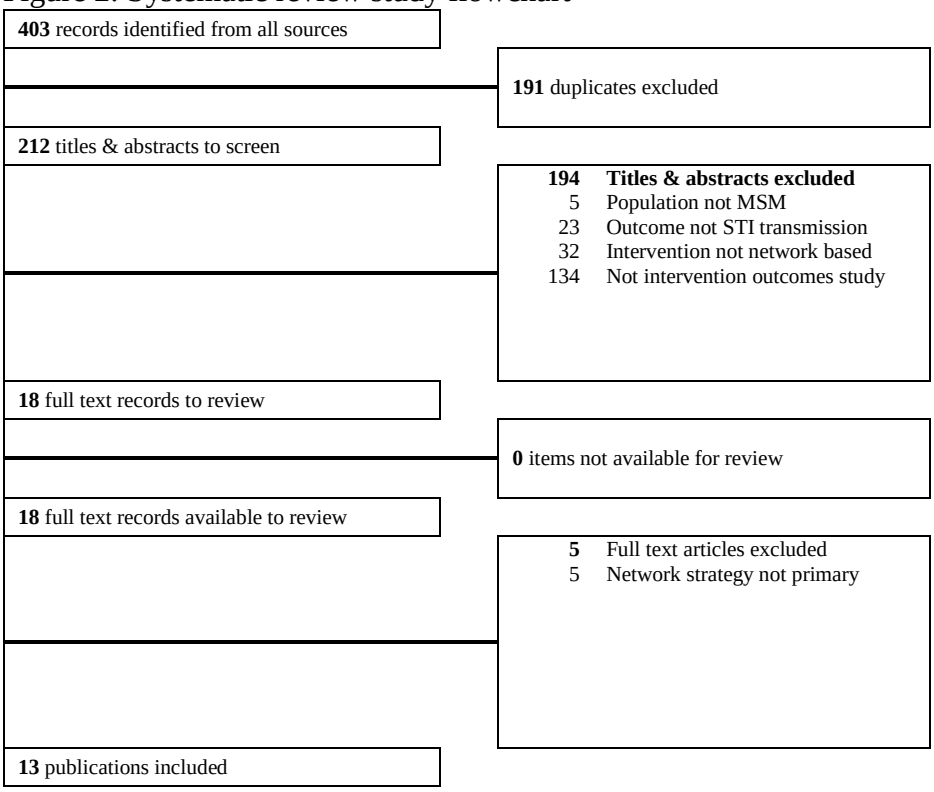
Results

Because of the magnitude of heterogeneity with respect to study design (including both RCTs and non-experimental designs), social network intervention type (four different combinations and types), intervention setting (real world versus online), and reported outcomes, the authors decided combining data for a meta-analysis was not ideal at this time.

403 records were found after searching through all databases, with 212 unique citations being identified after eliminating duplicate entries. Screening of the unique citations resulted in 18 articles that were primary intervention studies on STI prevention in MSM populations using a social networks strategy. Following full text review of the identified 18 articles, five were further excluded because those interventions involved a social networks strategy not incorporated into

overall intervention strategy. This resulted in a final number of 13 publications to be included (see Figure 2 for flowchart).

Figure 2: Systematic review study flowchart



Extracted data on social network interventions can be found in Table 12. Of the 13 studies, three did not have any sort of comparison/control group, while five were quasi-experimental designs. Seven were conducted with MSM populations within the US, with the remaining being conducted internationally. For social network intervention strategy used (Valente, 2012), (k=8) studies used a combination of identification and induction, while (k=2) each used induction or identification + induction. Twelve (k=12) studies used some form of Opinion Leader (OL) as primary change agents, (k=2) studies used formal network mapping to identify change agents, (k=5) used roster matching, and (k=6) used informal referral methods.

All but one (k=12) study used training sessions on health promotion + communication strategies to train change agents.

Primary study outcomes were divided into three main categories, which were inconsistently reported across studies: 1) Behavioral (e.g. condom use, unprotected anal sex, getting an HIV test); 2) Psychosocial (e.g. attitudes, norms, beliefs, expectations around preventive health behaviors); and 3) Network (e.g. network size, degree centrality, bridging). All studies reported a behavioral outcome, while seven out of 13 reported any type of psychosocial outcome. Only four studies reported network measures/statistics or outcomes. Of the studies reporting network measures and outcomes, only one reported network changes as a result of the intervention.

Discussion

This study is the first systematic review covering social network interventions for sexual risk and transmission reduction specifically for MSM, applying a specific framework to guide description of implementation methods and intervention characteristics. Several notable trends in the development and implementation of network interventions, as well as reporting of outcomes, were observed that are discussed below. Network techniques and methods in the context of implementation are especially important to consider in this context, as they present both unique advantages and challenges for implementation (Valente et al., 2015).

Identification of Change Agents

Eleven of 13 of the reported interventions incorporated an "identification" network intervention strategy, meaning that a critical part of the intervention involved identifying individual nodes which would serve as catalysts for change (in this context, most often opinion leaders). In Valente's (2012) typography of social network interventions, widely accepted among

social network researchers as the standard for categorizing network intervention strategies, it is stated that identification interventions should use network data or network properties derived from mapping and generation of the network to identify change agents. However in our review, we found only two studies out of 13 where a formal network mapping process occurred in order generate network properties and metrics to help identify change agents. Five studies used a strategy of cross-matching limited capacity popularity rosters and assessing which names appeared most frequently. The remaining six studies, nearly 50% in this review, did not use any network determination method at all, relying on self-referrals and/or referrals from community organization and clinics. Methods for identifying change agents and opinion leaders in MSM social and sex networks are particularly important to consider, given their unique characteristics and structural differences compared to equivalent types of networks in the general population.

The large degree of heterogeneity and lack of consensus on how to best identify change agents across studies reflect differing perspectives existing among social network researchers. This is apparent even narrowing down to those studies using some sort of deterministic process in identifying optimal change agents. Some studies, including those (at least conceptually) using informal approaches focus on centrality based strategies, i.e. using basic centrality network measures (e.g. indegree) or popularity-based properties to ascertain change agents. This reflects a more traditional and well-tested view that the most influential change agents will have the greatest number of ties or be the most popular.

More recently, researchers such as Schneider and Young have advocated for change agent identification methods that take into account the Theory of the Strength of Weak Ties, and leverage the powerful potential advantages of bridging positions (Granovetter, 1977). The two studies in our review using bridging thus either determined change agents through network

scores considering centrality specifically within the context of bridging (Young et al., 2018), or novel approaches such as systematic link deletion to ascertain the effects of changes in path length between nodes of differing attributes (Valente & Fujimoto, 2010). In both of these cases, interventions leveraged the concept that change agent nodes with network positions allowing greater access to network members of differing attributes may be key players, instead of relying on raw centrality or popularity related factors alone. While popular (or central) change agents have the status and connections that can facilitate peer influence, individuals with access to unique sub-communities are crucial for intervention diffusion throughout the network, especially in the case of biomedical types of interventions (Young et al., 2018).

Yet another peer agent identification method not observed in this review but of growing interest has its foundations in the theory of the "friendship paradox" of social networks (Feld, 1991) and its extension the "paradox of the paradox of friends" (Kumar, Krackhardt, & Feld, 2018), reflecting the idea that on average, the friends of randomly selected individuals are more central in the network than the individuals who named them, i.e. your friends have more friends than you do. This approach may be ideal in resource-limited settings, but has thus far only been tested in one RCT (in the context of nutrition interventions in Central America), although results indicated this method outperformed traditional previously discussed change agent identification methods. (Kim et al., 2015). The friendship paradox also lends itself to perhaps a reconciliation of centrality versus bridging approaches, as in these cases inversity types of metrics that weigh both of these factors have potential in change agent determination (Kumar, Krackhardt, & Feld, 2018).

Beyond identification of change agents, several interventions were venue-based network interventions, meaning that the location and characteristics of chosen venues were critical for

peer change agent selection, beyond relying completely on the personal social networks of individuals (Kelly et al., 1991, Kelly et al., 1997, Kalichman et al., 2013). For these interventions, similar methods for identifying venues can be considered.

Reporting of network metrics, properties, and intervention training

Despite being categorized as network interventions, only half of eligible studies reported at least one network metric and/or property. Having network data is important not only to provide a descriptive characterization of the network, but also for replication and dissemination of associated interventions in other MSM populations. Having metrics of change agents particularly important as this provides information on attributes of potentially successful change agents and opinion leaders which may be generalizable to other interventions. Additionally, post baseline follow-up metrics and network change data were only reported in one study. This information is important for intervention because leveraging the reach of networks is a core motivator for utilizing a social network approach in the first place rather than individual-level education and behavior change methods. Particularly for interventions incorporating the induction strategy, (comprising over 50% of the studies in this review), if the network is what is being leveraged as the vehicle for mechanism of change, characteristics and changes in the network and influential nodes should be reported, otherwise, we cannot definitively conclude observed behavioral outcome changes were directly attributable to the network aspect of the intervention, or rather to other general intervention effects.

Another area where improved reporting is warranted, particularly in opinion leader interventions where opinion leaders are trained to disseminate intervention content through their social networks, is on training sessions. Understanding the content of the trainings is important as this is the information being diffused through networks by opinion leaders. Additionally

(beyond health-specific information such as HIV epidemiology or where to get tested), many of the trainings featured sessions on how to communicate more effectively, which may be important in evaluating intervention reach and rate of diffusion. In our review, only six studies reported detailed information on training content, theoretical basis of the content, and dosage of training. The remaining studies did not provide any detail on training content besides general information (e.g. training in "health promotion" and "communication strategies"), and further details were not available in published protocols or other articles from the same parent study.

Limitations

Conclusions of this systematic review should be considered with several limitations in mind. These include that despite an extensive systematic search across several major databases, it is possible some articles may not have been identified, and very recent and not yet published studies were missed. Additionally, relating to publication bias, all identified and included studies reported positive results, whereas even studies that did not have positive or significant findings may still be informative with regards to practical implications about the interventions (even if such studies were not willingly excluded). Furthermore, there is a lack of standard definitions and terms for social network interventions, thus, studies that may have used networks in some part of their intervention but labeled it using other terms may not have been captured. This lack of consensus on terminology is reflected in both the initial search resulting in studies needing to be excluded despite falling under "social network intervention' MeSH terms, in addition to the reciprocal concern of missing true network studies identified using different terms. We also recognize the challenges of cost and statistical limitations, as generating and mapping networks can be resource intensive in both these areas. Finally, the grey literature was not explored in this review.

Future Directions

Several key trends emerged as a result of a systematic analysis of the social network intervention literature in MSM for reduction of sexual risk and transmission. These include evidence for the promise of overall effectiveness of network interventions to reduce risk and transmission, while also highlighting the need for standardization of reporting for network metrics and intervention training properties, as well as further need to investigate different change agent determination methods.

Relating to this is that while identifying and reaching central and influential nodes has long been a focus in the social networks research, challenges remain when identifying more peripheral or isolated nodes, which often represent the most vulnerable individuals with greatest need for intervention. Other questions for future exploration related to different aspects of optimizing intervention uptake and diffusion through networks, include the potential of targeting low threshold adopters first rather than focusing only on network position.

Since the majority of interventions in this context were opinion leader interventions, there is a need to consider other types and combinations of the four major network intervention strategies. For example, no intervention using the segmentation approach was identified. A segmentation approach could be promising in certain contexts, e.g. among IV drug using MSM as evidence suggests their networks may include denser clusters of nodes based on needle sharing, allowing interventions in this population to be conducted revolving around these naturally occurring groups (van de Laar et al., 2009; Valente 2012). Another area with great potential are simulation studies, such as those featuring agent-based modeling as a methodology to assess the effect of network interventions more comprehensively than RCT-style study designs (Khanna et al., 2019). With vulnerable populations and the characteristics inherent to social

network interventions, RCT-style designs are typically not feasible and practical to conduct, due to high cost and ethical considerations.

Table 12: Study design, sample, intervention, network characteristics and outcome categories of included studies by method of identification (k=13)

1st Author Year Location	Study Characteristics	Sample Characteristics		Intervention Characteristics			Network Characteristics		Outcome categories
	Study Design Unit of Assignment (n) Individuals (n)	Sample Source(s)	Race/Ethnicity Mean Age	Change Agents: Agent Type + Identification Method	Change Agents: Training, Dose Content	Delivery Method: Communication Method by change agents	Type of Network	Network measures	
Identification + Induction Interventions									
Amirkhanian 2003 Russia, Bulgaria	1-arm pre-posttest Unit=Network (n=1) Int (n=82)	Bars, clubs, street venues	NR 24.4 yrs	Opinion leaders Sociometric "social status score" indicator computed based on difference between positive and negative nominations received	5 weekly sessions with role play and review + 1 booster after 2 wks Communication, health promotion concepts (HBM, TPB), HIV epi	OLs to network members (face-to-face)	Sociometric	NR	Psycho-Social, Behavioral, Change agent
Amirkhanian 2005 Russia, Bulgaria	2-arm RCT, pre-posttest Unit=Network (n=52) Ctl (n=143), Int (n=133)	Bars, clubs	NR 22.5 yrs	Opinion leaders Sociometric "social status score" indicator computed based on difference between positive and negative nominations received	5 weekly sessions with role play and review + 4 boosters over 3 months Communication, health promotion concepts (HBM, TPB), HIV epi	OLs to network members (face-to-face)	Sociometric	Network size	Psycho-Social, Behavioral, Network, Change agent
Amirkhanian 2015 Russia, Hungary	2-arm RCT, pre-posttest Unit=Network (n=18) Ctl (n=287), Int (n=339)	Bars, private parties, cruising locations	NR 29.0 yrs	Opinion leaders Sociometric "social status score" indicator computed based on difference between positive and negative nominations received. Among those with highest status scores, persons with highest betweeness centrality	5 weekly sessions with role play and review + 4 boosters over 3 months Communication, health promotion concepts (HBTs), HIV epi	OLs to network members (face-to-face)	Sociometric	NR	Psycho-Social, Behavioral, Change agent
Hosek 2015 USA	1 arm timeseries Unit=Network (n=1) Int (n=406)	Community based organization (CBO)	100% AA 20.9 yrs	Opinion leaders CBO members were observed and then approached based on Kelly's (1991) criteria	4 weekly sessions with role play and review over 1 month Communication, health promotion concepts (norms), HIV epi	OLs to participants identified through MSM community center (face-to-face)	N/A	N/A	Psycho-Social, Behavioral, Change agent
Kalichman 2013 South Africa	2-arm RCT, pre-posttest Unit=City (n=12) Ctl (n=487) Int (n=497)	Shebeens (unlicensed clubs bars)	98% Afr 30.2 yrs	Seeds Shebeen staff identified men who were present most frequently	3 sessions Interpersonal communication skills, individual health behavior change concepts (Social Action Theory)	Seeds to network members (face-to-face)	N/A	N/A	Psycho-social Behavioral
Kelly 1991 USA	2-arm RCT, pre-posttest Unit=City (n=3) Ctl (n=328) Int (n=662)	Clubs	86% White 14% AA/Hisp 29.1 yrs	Opinion leaders Club bartenders asked to create roster of most social men after 1 weak observation. Men appearing the most on multiple lists	4 weekly 90-min sessions Health communication, health promotion concepts, HIV epi	OLs to network members (face-to-face)	Egocentric	NR	Behavior, Change agent
Kelly 1997 USA	2-arm RCT, pre-posttest Unit=City (n=8) Ctl (n=174) Int (n=268)	Bars	90% White 3.0% AA 2.0% Hisp 3.0% NA 31.1 yrs	Opinion leaders Club bartenders asked to create roster of most social men after 1 week observation. Men appearing most selected.	5 weekly sessions with role play and review Communication, health promotion concepts, HIV epi	OLs to network members (face-to-face)	Egocentric	NR	Behavioral, Change agent

Young 2018 USA	2-arm RCT, pre-posttest Unit=Individual (n=423) Ctl (n=214) Int (n=209) Crossover	Facebook friendship study network	100% AA 25.9yrs	Opinion leaders OLs based on network members with highest scores in betweeness centrality, eigenvector centrality, key player, and bridging scores	1 session + 8 boosters over 8 months HIV epi, PrEP education, communication skills, behavioral risk factors, social media training	OLs to network members (face-to-face)	Sociometric	Tie number Sociometric network diagram	Psycho-Social, Behavioral, Network, Change agent
Induction Interventions									
Halkitis 2011 USA	3-arm, posttest Unit=Individual (n=509) Arm 1 (n=400), Arm 2 (n=109), Arm 3 (n=49)	CBO, and CBO referrals	98.4% AA 26.4 yrs	Opinion leaders MSM perceived to be influential by CBO staff or self-reported having an MSM network were recruited	Training sessions on coaching network members to engage in behavior change	OLs to network members (face-to-face)	Egocentric	NR	Behavioral
Ko, 2013 Taiwan	2-arm nonequal pre-posttest Unit=Individual (n=1037) Ctl (n=485) Int (n=552)	Online posts on Facebook, community coalition referrals	NR 24.8yrs	Opinion leaders Recruited and recommended by community coalition partners	Sessions over 12 weeks HIV prevention strategies, social marketing, risk reduction and behavior change strategies	OL posts (message, video, discussion) on major online MSM activity hubs (online communication only)	Sociometric	NR	Behavioral
Identification + Alteration Interventions									
Young 2013 USA	2-arm RCT, pre-posttest Unit=Individual (n=112) Ctl (n=55) Int (n=57)	Online ads and social media, community fliers	27.7% AA 59.8% Hisp 10.7% White 1.8% Asian 31.5 yrs	Peer leaders Recruited from CBOs. CBO staff gave study fliers to well-known + respected members of the community	3 sessions + 12 boosters over 12 weeks HIV epi, health communication strategies	PLs in private Facebook groups involving posts, chats, and private messages (online communication only)	Sociometric	NR	Behavioral Change agent
Young 2014 USA	2-arm RCT, pre-posttest Unit=Individual (n=112) Ctl (n=53) Int (n=54)	Online ads and social media, community fliers, referrals from clinics	90% AA/Hisp 31.0 yrs	Peer leaders Recruited from CBOs. CBO staff gave study fliers to well-known + respected members of the community	3 sessions + 12 boosters over 12 weeks HIV epi, social media outreach strategies	PLs in private Facebook groups involving posts, chats, and private messages (online communication only)	Sociometric	Sociometric network diagram Degree centrality # nodes # isolates # ties Density Mean path length Distance-based cohesion	Behavioral, Network, Change agent
Identification Interventions									
Schneider 2014 India	4-arm posttest Unit=Individual (n=91) Arm 1 (n=22), Arm 1 (n=18), Arm 1 (n=25), Arm 1 (n=26)	Venues in MSM cruising locations	NR 27.0 yrs	Peer change agent Selected based on highest network bridging centrality score and highest "link deletion" bridging score	Use of different strategies for peer change agent selections as comparisons for optimal change agents	PCAs to network members (face-to-face)	Sociometric	Sociometric network diagram Centrality median Bridging median Bridging mean	Psycho-social Behavioral, Network, Change agent

[1] Intervention types based on (Valente, 2012) social network intervention typology

Identification: intervention relies on identifying a "node" based on some network property. Most common example of this are "Opinion Leader" interventions. Nodes may chosen due to characteristics such as network centrality or bridging potential.

[1] Segmentation: intervention is directed to groups of individuals. Segmentation interventions identify and expect a whole group to adopt something new at the same time, e.g. finding groups of densely connected nodes.

[1] Induction: excitation of the network occurs such that novel interaction between individuals are activated. I.e. these intervention stimulate or force peer-to-peer interactions to create cascades of in behavioral/information diffusion. For example, word-of-mouth interventions (using social media) or snowball interventions where people recruit others.

[1] Alteration: intervention that change the network through add/deleting nodes, adding/deleting links, re-wiring existing links. E.g. removing certain nodes in sexual contact networks or introducing a new node such an AA program.

Aim 3 References

Amirkhanian, Y. A., Kelly, J. A., Kabakchieva, E., Kirsanova, A. V., Vassileva, S., Takacs, J., & Mocsonaki, L. (2005). A randomized social network HIV prevention trial with young men who have sex with men in Russia and Bulgaria. *AIDS*, *19*(16), 1897-1905.

Amirkhanian, Y. A., Kelly, J. A., Kabakchieva, E., McAuliffe, T. L., & Vassileva, S. (2003). Evaluation of a social network HIV prevention intervention program for young men who have sex with men in Russia and Bulgaria. *AIDS Education and Prevention*, *15*(3), 205-220.

Amirkhanian, Y. A., Kelly, J. A., Takacs, J., McAuliffe, T. L., Kuznetsova, A. V., Toth, T. P., & Meylakhs, A. (2015). Effects of a social network HIV/STD prevention intervention for men who have sex with men in Russia and Hungary: a randomized controlled trial. *AIDS (London, England)*, *29*(5), 583.

Feld, S. L. (1991). Why your friends have more friends than you do. *American Journal of Sociology*, *96*(6), 1464-1477.

Granovetter, M. S. (1977). The strength of weak ties. In *Social Networks* (pp. 347-367). Academic Press.

Halkitis, P. N., Kupprat, S. A., McCree, D. H., Simons, S. M., Jabouin, R., Hampton, M. C., & Gillen, S. (2011). Evaluation of the relative effectiveness of three HIV testing strategies targeting African American men who have sex with men (MSM) in New York City. *Annals of Behavioral Medicine*, *42*(3), 361-369.

Harawa, N. T., Brewer, R., Buckman, V., Ramani, S., Khanna, A., Fujimoto, K., & Schneider, J. A. (2018). HIV, Sexually Transmitted Infection, and Substance Use Continuum of Care Interventions Among Criminal Justice–Involved Black Men Who Have Sex With Men: A Systematic Review. *American Journal of Public Health*, *108*(S4), e1-e9.

Hosek, S. G., Lemos, D., Hotton, A. L., Fernandez, M. I., Telander, K., Footer, D., & Bell, M. (2015). An HIV intervention tailored for black young men who have sex with men in the House Ball Community. *AIDS Care*, *27*(3), 355-362.

Kalichman, S. C., Simbayi, L. C., Cain, D., Carey, K. B., Carey, M. P., Eaton, L., ... & Mwaba, K. (2013). Randomized community-level HIV prevention intervention trial for men who drink in South African alcohol-serving venues. *The European Journal of Public Health*, *24*(5), 833-839.

Kelly, J. A., Murphy, D. A., Sikkema, K. J., McAuliffe, T. L., Roffman, R. A., Solomon, L. J., ... & Collaborative, T. C. H. P. R. (1997). Randomised, controlled, community-level HIV-prevention intervention for sexual-risk behaviour among homosexual men in US cities. *The Lancet*, *350*(9090), 1500-1505.

Kelly, J. A., St. Lawrence, J. S., Diaz, Y. E., Stevenson, L. Y., Hauth, A. C., Brasfield, T. L., ... & Andrew, M. E. (1991). HIV risk behavior reduction following intervention with key opinion

leaders of population: an experimental analysis. *American Journal of Public Health*, *81*(2), 168-171.

Khanna, A.S., Schneider, J.A., Collier, N., Ozik, J.,... Fujimoto K., & Hawara, N.T. (2019). A modeling framework to inform PrEP initiation and retention scale-up in the context of Getting to Zero Initiatives. *AIDS*. (In Press)

Kim, D. A., Hwong, A. R., Stafford, D., Hughes, D. A., O'Malley, A. J., Fowler, J. H., & Christakis, N. A. (2015). Social network targeting to maximise population behaviour change: a cluster randomised controlled trial. *The Lancet*, *386*(9989), 145-153.

Ko, N. Y., Hsieh, C. H., Wang, M. C., Lee, C., Chen, C. L., Chung, A. C., & Hsu, S. T. (2013). Effects of Internet popular opinion leaders (iPOL) among Internet-using men who have sex with men. *Journal of Medical Internet Research*, *15*(2), e40.

Kumar, V., Krackhardt, D., & Feld, S. (2018). *Network interventions based on inversity: Leveraging the friendship paradox in unknown network structures*. Working Paper, Yale University.

Latkin, C. A., & Knowlton, A. R. (2015). Social network assessments and interventions for health behavior change: a critical review. *Behavioral Medicine*, *41*(3), 90-97.

Lyles, C. M., Kay, L. S., Crepaz, N., Herbst, J. H., Passin, W. F., Kim, A. S., ... & Mullins, M. M. (2007). Best-evidence interventions: findings from a systematic review of HIV behavioral interventions for US populations at high risk, 2000–2004. *American Journal of Public Health*, *97*(1), 133-143.

Maulsby, C., Millett, G., Lindsey, K., Kelley, R., Johnson, K., Montoya, D., & Holtgrave, D. (2014). HIV among black men who have sex with men (MSM) in the United States: a review of the literature. *AIDS and Behavior*, *18*(1), 10-25.

Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of black men who have sex with men: a critical literature review. *American Journal of Public Health*, *96*(6), 1007-1019.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine*, *6*(7), e1000097.

Mullen, P. D., Ramirez, G., Strouse, D., Hedges, L. V., & Sogolow, E. (2002). Meta-analysis of the effects of behavioral HIV prevention interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. *JAIDS, 30*, S94-S105.

Schneider, J. A., Zhou, A. N., & Laumann, E. O. (2015). A new HIV prevention network approach: sociometric peer change agent selection. *Social Science & Medicine*, *125*, 192-202.

Shea, B. J., Reeves, B. C., Wells, G., Thuku, M., Hamel, C., Moran, J., ... & Henry, D. A. (2017). AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. *BMJ*, *358*, j4008.

Shelton, R. C., Lee, M., Brotzman, L. E., Crookes, D. M., Jandorf, L., Erwin, D., & Gage-Bouchard, E. (2018). Use of social network analysis in the development, dissemination, implementation, and sustainability of health behavior interventions for adults: A systematic review. *Social Science & Medicine*, *220*, 81-101.

Valente, T. W. (2012). Network interventions. *Science*, *337*(6090), 49-53.

Valente, T. W., & Fujimoto, K. (2010). Bridging: locating critical connectors in a network. *Social Networks*, *32*(3), 212-220.

Valente, T. W., Palinkas, L. A., Czaja, S., Chu, K. H., & Brown, C. H. (2015). Social network analysis for program implementation. *PloS One*, *10*(6), e0131712.

van de Laar, T., Pybus, O., Bruisten, S., Brown, D., Nelson, M., Bhagani, S., ... & Gőtz, H. (2009). Evidence of a large, international network of HCV transmission in HIV-positive men who have sex with men. *Gastroenterology*, *136*(5), 1609-1617.

Vonville, H. (2015). Excel workbooks for systematic reviews.

Wang, K., Brown, K., Shen, S. Y., & Tucker, J. (2011). Social network-based interventions to promote condom use: a systematic review. *AIDS and Behavior*, *15*(7), 1298.

Young, S. D., Cumberland, W. G., Lee, S. J., Jaganath, D., Szekeres, G., & Coates, T. (2013). Social networking technologies as an emerging tool for HIV prevention: a cluster randomized trial. *Annals of Internal Medicine*, *159*(5), 318-324.

Young, S. D., Holloway, I., Jaganath, D., Rice, E., Westmoreland, D., & Coates, T. (2014). Project HOPE: online social network changes in an HIV prevention randomized controlled trial for African American and Latino men who have sex with men. *American Journal of Public Health*, *104*(9), 1707-1712.

Young, L. E., Schumm, P., Alon, L., Bouris, A., Ferreira, M., Hill, B., ... & Schneider, J. A. (2018). PrEP Chicago: A randomized controlled peer change agent intervention to promote the adoption of pre-exposure prophylaxis for HIV prevention among young Black men who have sex with men. *Clinical Trials*, *15*(1), 44-52.

CONCLUSION

This research supports the importance of considering effects of the social environment on health services utilization and awareness of health services resources, which may in turn provide a potential conduit to reducing HIV and STI transmission in MSM populations. Not all of our initial hypotheses were supported, as differential and even opposing associations between which types of social capital were most salient for these health outcomes were observed in Houston versus Chicago. These results serve to highlight the unique social contexts and social structures in which individual exist, and how they can ultimately impact health outcomes through different pathways. For example, in Chicago, accessing a more heterogeneous network of peers with a more diverse range of knowledge through bridging social capital was associated with health services awareness, while in Houston the converse was observed, with evidence that bonding social capital was more important for MSM in this community in terms of awareness and utilization to health services.

These findings, combined with conclusions from the systematic review on implementation of social network interventions (e.g. identifying peer change agents and the reporting of network and intervention characteristics), hopefully together can provide a stepping stone towards optimizing interventions that can harness the potential of social capital to create positive change not only in reducing HIV and STI transmission in MSM, but to perhaps improve the health of other populations in other contexts as well.

APPENDICES

Appendix A: YMAP Wave 2 Survey

YMAP V2

SECTION 1 – Initial Consent

ID1. **YOU ENTERED ID NUMBER [ID]. PLEASE MAKE SURE THIS ID IS CORRECT AND RE-ENTER THE ID BELOW.**

IF ID DISPLAYED DOES NOT MATCH, PLEASE EXIT OUT OF THE SURVEY AND RE-ENTER WITH THE CORRECT ID.

[ ]

ID2. **IS PARTICIPANT A SEED?**

❍ YES
❍ NO

ID3. **ENTER PARTICIPANT COUPON NUMBER:**

[ ]

PAGE BREAK

CONSENT1. **INTERVIEWER CARRY OUT INITIAL CONSENT PROCESS**

PAGE BREAK

City. **IS THIS INTERVIEW BEING CARRIED OUT IN ...**

❍ Chicago
❍ Houston

PAGE BREAK

→Displays for Chicago only.

ChiGroup. **CHICAGO ONLY: WHICH GROUP ARE YOU A PART OF?**

❍ Lurie Children's Hospital
❍ University of Chicago

PAGE BREAK

StartTime. **What time is it now?**

Time - Hour	<DROP-DOWN SHOWS: 1:, 2:, 3:, …,12:>
Time - Minutes	<DROP-DOWN SHOWS: 01, 02, 03, …, 59>
AM / PM	<DROP-DOWN SHOWS: AM, PM.>

IntervName. **INTERVIEWER – PLEASE ENTER YOUR NAME SO WE CAN IDENTIFY WHO COMPLETED THIS INTERVIEW.**

SECTION BREAK - Introduction

INTRO0. **Thank you for participating. Before we begin, I'd like to ask that you turn off or silence any cell phone or mobile device you may have with you. This is just to be sure that we can both focus on the questions and get the correct information. Thank you.**

I want to begin with an overview of the steps so that you know how this goes:

- **First, we go through part 1 of the interview.**
- **Then we take a short break.**
- **After the break, we take your height and weight and you can have a snack if you want.**
- **After the snack, we finish part two of the interview.**
- **When we finish the interview, with your consent, we take blood and anal samples and do a rapid HIV test.**
- **This will conclude data collection for the study.**

PAGE BREAK

WATER.
DATA COLLECTOR GIVES PARTICIPANT BOTTLE OF WATER.

PAGE BREAK

INTRO1 **This is Part I of the interview.**

TIMELINE **In this survey, we will be asking you about different things that you have done in the past 12 months, and in the past 6 months. To help you remember, we are going to start by making a timeline of memorable things that have happened to you in the past 12 months, 6 months, 3 months, and 1 month. Think about things you might be able to remember the exact or approximate date for that happened to you or somebody close to you in the past 12 months. This might include things like:**

- **birthdays**
- **starting or ending a school term or graduations**
- **accidents, arrests, or crime victimization**
- **moving to a new place**
- **beginning or ending a job**

INTERVIEWER USE PAPER TIMELINE SHEET. AS YOU GO THROUGH THIS QUESTION, ENTER INFORMATION ON PORTRAIT SIDE OF PAGE. IF R REMEMBERS THINGS OVER THE PAST 12 MONTHS THAT CAN BE DATED TO TIMES OTHER THAN 12, 6, 3 and 1 MONTH, ADD THESE IN-BETWEEN DATES IN AS REFERENCE POINTS ALONG WITH DATES. THEN TRANSFER ANY

MEMORABLE EVENTS TO HEADER FIELDS ON THE REVERSE LANDSCAPE SIDE OF PAGE FOR USE LATER.

--Is there anything that happened 12 months ago around October 29, 2013 that you can remember clearly?

--Is there anything that happened 6 months ago around April 29, 2014 that you can remember clearly?

--Is there anything that happened 3 months ago around July 29, 2014 that you can remember clearly?

--Is there anything that happened 1 month ago around September 29, 2014 that you can remember clearly?

Please use this timeline as you answer questions about the past 6 months and the past 12 months throughout the survey.

SECTION BREAK – Begin Demographics I

Demo1Intro.
We want to start by getting some basic background information about you.

1. What is your date of birth?

	Month	**Day**	**Year**
Date of Birth	<DROPDOWNS SHOW THE FOLLOWING RANGES OF SELECTIONS>		
	<January-December, REF>	<1-31, REF>	<1996-1984, REF>

2. Are you a full time student, part time student or not a student?
- ❍ FT student
- ❍ PT student
- ❍ Not a student
- ❍ DK
- ❍ REF

→If R answers Not a student, DK, or REF, skips to question 4.

PAGE BREAK

3. What degree, certificate or license are you <u>working toward</u> right now?

❍ Certificate or license -- what certificate or license? _____
❍ High School Degree or GED
❍ Associate's degree or technical/vocational license (2-yr college degree, AA or AS)
❍ Bachelor's degree (4-yr college degree, BA or BS)
❍ Master's degree
❍ Doctoral or graduate professional degree (MD, Law)
❍ DK
❍ REF

4. What is the highest level of schooling or highest degree, certificate or license that you <u>completed</u>?

❍ Grade K - 12 - Please specify the highest grade: _____
❍ High School Degree or GED
❍ Some college (no degree)
❍ Associate's degree or technical/vocational license (2-yr college degree, AA or AS)
❍ Bachelor's degree (4-yr college degree, BA or BS)
❍ Master's degree
❍ Doctoral or graduate professional degree (MD, Law)
❍ DK
❍ REF

5. Are you Hispanic or Latino?

❍ Yes
❍ No
❍ DK
❍ REF

6. Do you identify as black, white, Asian or something else? CHECK ALL THAT APPLY

❑ Black/African American
❑ White/Caucasian
❑ American Indian or Alaskan Native
❑ Asian or Pacific Islander
❑ Other (PLEASE SPECIFY): _____

PAGE BREAK

→ If answered Q5 with Yes (R is Hispanic or Latino), will be asked the following question:

Q6.1 How much do you feel a part of the Hispanic community? Would you say ...

❍ Very much a part of
❍ Somewhat a part of
❍ <u>Not</u> very much a part of, or
❍ <u>Not at all</u> a part of
❍ <u>REF</u>

→ If answered Q6 with a single choice, that choice will appear in this question.

Q6.2 How much do you feel a part of the [ANSWER FROM QUESTION 6] community? Would you say …

- ❍ Very much a part of
- ❍ Somewhat a part of
- ❍ Not very much a part of, or
- ❍ Not at all a part of
- ❍ REF

→ If answered Q6 with multiple choices, the respondent will get a version of the question for each individual choice selected.

Q6.3, 6.4, 6.5, 6.6, 6.7, & 6.8 Using Card A, how much do you feel a part of the [Black/African-American or White/Caucasian or American Indian/Alaskan native or Asian/Pacific Islander or Specified Other] community? Would you say …

- ❍ Very much a part of
- ❍ Somewhat a part of
- ❍ Not very much a part of, or
- ❍ Not at all a part of
- ❍ REF

Q6.9 Using Card A, how much do you feel a part of the gay community? Would you say…

- ❍ Very much a part of
- ❍ Somewhat a part of
- ❍ Not very much a part of, or
- ❍ Not at all a part of
- ❍ REF

7. Where do you live? The closest intersection or cross-streets is OK

INTERVIEWER MAKE SURE IF R LISTS TWO STREETS THAT THESE ACTUALLY CROSS AND DO NOT RUN PARALLEL TO EACH OTHER.

Street that runs one way (e.g. East and West) _____

Street that runs the other way (e.g. North and South) _____

Other descriptor or address _____

Q7.1. How much do you feel a part of the neighborhood you live in?

- ❍ Very much a part of
- ❍ Somewhat a part of
- ❍ Not very much a part of
- ❍ Not at all a part of
- ❍ REF

8. Do you currently have health insurance of any kind, government or private?

❍ YES
❍ NO
❍ DK
❍ REF

→ If no, skips to question 10.

9. What type of health insurance do you have?

❍ Medicaid
❍ CountyCare (Chicago only)
❍ Harris Health (Gold Card, Houston only)
❍ Medicare (medical card, public assistance)
❍ Veteran's Administration
❍ Private or work insurance
❍ School-based insurance
❍ COBRA
❍ No insurance
❍ Other (PLEASE SPECIFY): _____

HANDTO1. **Now we'd like to ask you to fill out some questions that are a bit more personal. We ask that you be as honest as possible. Please continue to answer questions until you see a message to return the iPad to me. PASS iPAD TO RESPONDENT AFTER ADVANCING TO NEXT PAGE.**

SECTION BREAK – Sexual Orientation and Screening (Self-Administered)

10. In terms of gender, how do you identify? Are you ...

❍ Male
❍ Female
❍ Transgender
❍ Something else (Please specify) _____

11. Do you consider yourself to be gay, straight, bisexual, or something else?

❍ Gay
❍ Straight (or heterosexual)
❍ Bisexual
❍ Something else (Please specify) _____

PAGE BREAK

Healthcare. Next are questions about your health and healthcare.

12. Has your penis been examined as part of any sexually transmitted disease (STD) test in the last 12 months?

❍ YES
❍ NO

13. Has your anus been examined as part of any sexually transmitted disease (STD) test in the last 12 months?

❍ YES
❍ NO

PAGE BREAK

14. Have you ever been told in the past 12 months by a doctor, nurse or other health care provider that you have HPV (Human papillomavirus)?

❍ YES
❍ NO

15. Have you ever been told in the past 12 months by a doctor, nurse or other health care provider that you have syphilis?

❍ YES
❍ NO

16. Have you ever been told in the past 12 months by a doctor, nurse or other health care provider that you have anal or genital warts?

❍ YES
❍ NO

SECTION BREAK - General Group Sex (Self-Administered)

GrSexIntro. **Now we are going to ask you questions about group sex. Sometimes people have sex in a room or at a party where two or more other people are also having sex. We will call this 'group sex'.**

17. In the past 6 months, that is since [DATE 6 MONTHS AGO], how often have you engaged in group sex?

❍ 1 - Every day
❍ 2 - Several times a week
❍ 3 - Once a week
❍ 4 - Once every two weeks
❍ 5 - Once a month
❍ 6 - Less often
❍ 7 - Never
❍ Other, please describe: _____

→ **If Never, skips to question 25.**

18. When you have group sex, is it usually as part of an informal, personal get together or at a party or organized event?

❍ Informal get together
❍ Organized event or party
❍ Both
❍ Other, please describe: _____

19. Think about the last get-together or event that you went to where you had group sex. How did you learn about it? [CHECK ALL THAT APPLY]

❒ Facebook - Which group? _____
❒ Other online: Social Media - What site? _____
❒ Flyer or poster
❒ Personal invitation
❒ Other, please describe: _____

20. At this same event, about how many <u>other</u> people were there, not including yourself?

<DROPDOWN INCLUDES: 2, 3, 4…10; 11 to 15; 16 to 24; 25 or more>

21. Of the [NUMBER FROM QUESTION 20] people who were there besides you, about how many do you think were…

	Attendance
Male?	___
Female?	___
Transgender?	___
Total	[AUTOSUM]

22. Of the [NUMBER FROM QUESTION 20] people who were there besides you, about how many do you think were...

	Attendance
Hispanic or Latino?	___
Black?	___
White?	___
Total	[AUTOSUM]

PAGE BREAK

23. During the <u>last</u> get-together or event that you went to where you had group sex, How many people there did you have anal (or vaginal) sex with?

<DROPDOWN SHOWS: 0,1, 2, 3, …, 24, 25+>

24. At this same event, were new condoms used with every different anal or vaginal sex partner?

❍ Yes
❍ No
❍ Changed at least once, but not for every new partner

SECTION BREAK – HIV Testing and Results (Self-Administered)

25. Have you been tested for HIV in the past 12 months (that is, after your last study visit)?

❍ YES
❍ NO

→ If NO, skips questions 26-42 and resumes at to PrEP_Intro.

26. When was the <u>first</u> time you were tested?

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

27. In the past two years that is, since [DATE 24 MONTHS AGO], how many times have you been tested for HIV?

<DROPDOWN SHOWS: 1, 2, 3,…..,15,16 or more, DK, REF>

PAGE BREAK

28.1. When was the last time you were tested for HIV?

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

28.2. Where did you get tested this most recent time?

❍ At home using a home kit
❍ Health center or social service organization
❍ Van or other mobile outreach

→ If 'Health center or social service organization' is selected, 29 displays:

29. And what place was that?

Organization _____
Address or location _____
City _____
State _____

30. What was the result of your <u>last</u> HIV test?

❍ Positive
❍ Negative

31. Have you ever been told by a doctor, nurse or other health care provider that you have HIV?

❍ Yes
❍ No

→ If Yes, and answer to 30 is Positive, skip to 32.
→ If No, and answer to 30 is Negative, skips questions 36-46 and resumes at PrEP_Intro.

PAGE BREAK

→ If 31 is Yes, and answer to 30 is Negative, HIV Check2 and 32 will display.
***HIV Check1*. To clarify, you have tested positive for HIV, but you have *not* been told that you have HIV. Can you explain your situation:** [ ]

→ If 31 is No, and 30 is Positive, HIV Check2 and 32 will display.
***HIV Check2*. To clarify, you have tested negative for HIV, but you have been told that you *do* have HIV. Can you explain your situation:** [ ]

PAGE BREAK

32. To the best of your knowledge, is your viral load currently detectable, undetectable, or something else?

❍ Detectable
❍ Undetectable
❍ Other, please specify: _____

33. Have you ever seen a primary care provider for HIV infection? Primary care providers are general or family doctors or sometimes nurse practitioners.

❍ Yes
❍ No

→ If No, skip to 37.

34. When did you first see a primary care provider for HIV? Primary care providers are general or family doctors or sometimes nurse practitioners.

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

PAGE BREAK

35. In the past 12 months, how many times have you seen a primary care provider for HIV infection?

<DROPDOWN SHOWS: 1, 2, 3,…..,15,16 or more>

36. In the past 6 months, how many times have you seen a primary care provider for HIV infection?

<DROPDOWN SHOWS: 1, 2, 3,…..,15,16 or more>

37. Where are you treated for HIV?

Organization

Address or Location

City

State

38. Do you currently have a prescription for HIV medications?

❍ Yes
❍ No

→ If No, skip to 42.

PAGE BREAK

39. In the last 30 days, on about how many days did you miss at least one dose of any of your HIV medicines?

<DROPDOWN SHOWS: 1, 2, 3,…..,15,16 or more>

40. In the last 30 days, how good a job did you do at taking your HIV medicines in the way you were supposed to?

❍ 1 - Very poor
❍ 2 - Poor
❍ 3 - Fair
❍ 4 - Good
❍ 5 - Very good
❍ 6 - Excellent

41. In the last 30 days, how often did you take your HIV medications in the way you were supposed to?

❍ 1 - Always
❍ 2 - Usually
❍ 3 - Sometimes
❍ 4 - Rarely
❍ 5 - Never

42. How much do you trust the person or people treating your HIV (your physician)? Would you say you trust them…

❍ Completely
❍ Mostly
❍ Somewhat
❍ A little
❍ Not at all

→ For HIV-negative participants only (resumes here from question 31):

PrEP_Intro: One way to fight HIV that is being tested is called PrEP, which stands for pre-exposure prophylaxis. PrEP is being tested as a way to fight HIV by giving HIV-negative people HIV drugs to keep them from getting HIV. The following questions are about your thoughts and opinions of this way of fighting HIV.

→ For HIV-negative participants only:

43. Have you ever taken HIV medication before sex because you thought it would lower your chances of getting HIV (also known as PrEP)?

❍ Yes
❍ No

→ If Yes to 43:

44. Did you take PrEP in the last 6 months?

❍ Yes
❍ No

→ If Yes to 44:

45. Are you currently taking PrEP now?

❍ Yes
❍ No

→ If Yes to 43:

46. When taking PrEP, how often did you use condoms during anal or vaginal sex?

❍ Never
❍ Less than half the time
❍ About half the time
❍ More than half the time
❍ Always

PAGE BREAK

***HandBack1*. Thank you. Please return the iPad to the interviewer.**

SECTION BREAK – Gay Subculture Identification

GayCulture. **Now I will read a list of different groups or crowds that are part of gay male culture. Using Card B, for each of these groups, please tell me if you feel you are part of this group, used to be part of this group, or were never part of this group. The first group is...**

	Never part of	Used to be	Part of this group	Never heard of	REF
Bear, otter, or cub	❍	❍	❍	❍	❍
Twink or chicken	❍	❍	❍	❍	❍
Jocks	❍	❍	❍	❍	❍
Daddies	❍	❍	❍	❍	❍
Circuit/party boys	❍	❍	❍	❍	❍
Gaymers/Geeks	❍	❍	❍	❍	❍
Drag queens	❍	❍	❍	❍	❍
Leather/kink (also: into bondage, BDSM)	❍	❍	❍	❍	❍
Queer	❍	❍	❍	❍	❍

SECTION BREAK - Migration

43. Have you ever lived in a city other than [Houston/Chicago] for more than one year?

❍ YES
❍ NO
❍ DK
❍ REF

→If NO, DK, or REF, skip to HANDTO2

44. Where else have you lived? ENTER UP TO FIVE LOCATIONS, CITY AND STATE
IF ANOTHER COUNTRY ENTER COUNTRY INSTEAD OF STATE

	City	State
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____

45. When did you most recently move to [Houston/Chicago]?

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

PAGE BREAK

46. Next is a section you answer yourself. We begin with questions about how you see your physical appearance and attractiveness in comparison to others. Try to think in general about yourself and others your age.

***HANDTO2.* GIVE IPAD TO RESPONDENT FOR SELF-ADMINISTERED SECTION.**

SECTION BREAK – Attractiveness (Self-Administered)

47. How attractive are you compared to others…

	Much less attractive	Somewhat less attractive	Somewhat more attractive	Much more attractive
your age in general?	❍	❍	❍	❍
in your circle of friends?	❍	❍	❍	❍

SECTION BREAK – Incarceration (Self-Administered)

Jail_Intro Now we have some questions about your experiences with law enforcement. Continue to the next page to answer these privately.

PAGE BREAK

48. In the last 12 months, have you been detained, arrested, or spent time in jail or prison?

❍ Yes
❍ No
→If NO, skip to HANDBACK2

PAGE BREAK

49. How old were you the first time you were detained, arrested, or spent time in jail or prison?
<DROPDOWN SHOWS: 12 or younger, 13, 14,…..75, 76+, DK, REF>

50. Please list all the cities, with state, where you have been detained, arrested or spent time in jail or prison in the last 12 months.

	City	State
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____
City and State	_____	_____

51. While incarcerated, did you have anal sex?

❍ Yes
❍ No

→If NO, skip to HANDBACK2

52. While incarcerated, did you have anal sex without a condom?

❍ Yes
❍ No

PAGE BREAK

HANDBACK2. Thank you. Please return the iPad to the interviewer.

SECTION BREAK - Alcohol, Smoking, and Substance Involvement

***ASSIST*. THE ALCOHOL, SMOKING, AND SUBSTANCE INVOLVEMENT SCREENING TEST**

Next I am going to ask you some questions about your experience with alcohol, tobacco products and other drugs across your lifetime and in the past three months. These substances can be smoked, swallowed, snorted, inhaled, injected or taken in the form of pills. Some of the substances listed may be prescribed by a health care provider like amphetamines, sedatives, pain medications. For this interview, we will not record medications that are used as prescribed by your health care provider. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know. While we are also interested in knowing about your use of various illicit drugs, please be assured that information on such use will be treated as strictly confidential.

53. Look at Card C. In your life, which of the following substances have you ever used? (NON-MEDICAL USE ONLY) "not prescribed by your health care provider"

	No	Yes	REF
1. Tobacco products: cigarettes, chewing tobacco, cigars, etc.	❍	❍	❍
2. Alcoholic beverages: beer, wine, spirits, etc.	❍	❍	❍
3. Cannabis: marijuana, pot, grass, hash, etc.	❍	❍	❍
4. Cocaine: coke, crack, etc.	❍	❍	❍
5. Methamphetamine: Crystal, "tina", meth, speed	❍	❍	❍
6. Ecstasy, E or Molly	❍	❍	❍
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc.	❍	❍	❍
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc.	❍	❍	❍
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc.	❍	❍	❍
10. Opioids: heroin, morphine, methadone, codeine, etc.	❍	❍	❍
11. Prescription Pain Killers: oxycodone, vicodin, T3, etc.	❍	❍	❍
12. Steroids	❍	❍	❍
13. Other – specify:	❍	❍	❍

→If zero YES answers selected, skip to 60

54. Using Card C, in the <u>past three months</u>, that is since [DATE 3 MONTHS AGO], how often have you used...

<ANSWER CHOICES FOR EACH: 0-Never, 1-Once or Twice, 2-Monthly, 3-Weekly, 4-Daily, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____
4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, "tina", meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

→If all answers about substance use are 0-Never or REF, skip to 58. The questions below, will list only those substances that respondent has used in the past 3 months.

55. Using Card C, in the <u>past three months</u>, that is since [DATE 3 MONTS AGO], how often have you had a strong desire or urge to use…

<ANSWER CHOICES FOR ALL PRODUCTS: 0-Never, 1-Once or Twice, 2-Monthly, 3-Weekly, 4-Daily, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____
4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, "tina", meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

56. Using Card C, in the past three months, how often have you failed to do what was normally expected of you because of your use of…

<ANSWER CHOICES FOR ALL PRODUCTS: 0-Never, 1-Once or Twice, 2-Monthly, 3-Weekly, 4-Daily, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____
4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, "tina", meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

57. Using Card C, in the <u>past three months</u>, how often has your use of [SUBSTANCE] led to health, social, legal or financial problems?

<ANSWER CHOICES FOR ALL PRODUCTS: 0-Never, 1-Once or Twice, 2-Monthly, 3-Weekly, 4-Daily, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____
4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, "tina", meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

58. Using Card C, has a friend or relative or anyone else ever expressed concern about your use of

<ANSWER CHOICES FOR ALL PRODUCTS: 1-No, never, 2-Yes, in the past 3 months, 3-Yes, but not in the past 3 months, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____

4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, “tina”, meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

59. Using Card C, have you ever tried and failed to control, cut down or stop using

<ANSWER CHOICES FOR ALL PRODUCTS: 1-No, never, 2-Yes, in the past 3 months, 3-Yes, but not in the past 3 months, REF>

1. Tobacco products: cigarettes, chewing tobacco, cigars, etc. _____
2. Alcoholic beverages: beer, wine, spirits, etc. _____
3. Cannabis: marijuana, pot, grass, hash, etc. _____
4. Cocaine: coke, crack, etc. _____
5. Methamphetamine: Crystal, "tina", meth, speed
6. Ecstasy, E or Molly _____
7. Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc. _____
8. Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc. _____
9. Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc. _____
10. Opioids: heroin, morphine, methadone, codeine, etc. _____
11. Prescription Pain Killers: oxycodone, Vicodin, T3, etc. _____
12. Steroids _____
13. Other – specify: _____ _____

60. Have you ever injected any drug? (NON-MEDICAL USE ONLY - ADD ONLY IF NEEDED: Not prescribed by your health care provider)

- ❍ 1- No, Never
- ❍ 2- Yes, in the past 3 months
- ❍ 3- Yes, but not in the past 3 months
- ❍ REF

SECTION BREAK – Social Network Generator

***SOCINTRO*. In this next section, we will discuss your social network, that is, the people you know and talk with. Remember, all information you tell us will be strictly confidential. Names will not be shared, and the identities of anyone you name will be secure and protected.**

***LargeNet*. Approximately how many people in [Houston/Chicago] do you know by name? These are people who you know and who also know you. You would know how to contact them directly and you have seen them in person in the past 6 months.**

[Definition of "knowing": There are many definitions of what it is to "know" someone. Basically, to know someone means that you recognize the person, know a name by which to address them and would greet them if you saw them on the street and that this relationship is reciprocal.] _____

***MedNet*. Of those individuals that you know by name in [Houston/Chicago], how many are guys who have sex with other guys? Keep in mind, these are people who you know and who**

also know you, who you know how to contact directly, and who you have seen in person in the past six months. _____

NOTE TO INTERVIEWER: THIS NUMBER SHOULD BE SMALLER THAN OR EQUAL TO THE PREVIOUS NETWORK SIZE.

SmallNet. **Of those guys you know by name in [Houston/Chicago] that have sex with other guys, how many are young men between the ages of 16-29? Keep in mind, these are people who you know and who also know you, who you know how to contact directly, and who you have seen in person in the past six months.** _____

NOTE TO INTERVIEWER: THIS NUMBER SHOULD BE SMALLER THAN OR EQUAL TO THE PREVIOUS NETWORK SIZE.

PAGE BREAK

61. ***SocList.*** **Next, we will discuss your close social network, that is, the people with whom you share personal information. These can be anyone. So I can ask some follow-up questions, please list the names of the people with whom you share personal information. First name and last initial or a nickname is fine as long as you will remember who it is referring to.**

ENTER UP TO 5 NAMES. IF FEWER THAN 5, ASK ONCE "Is there anybody else" THEN MOVE ON. IF MORE THAN 5, ASK FOR THE 5 R TALKS TO MOST ABOUT PERSONAL MATTERS

Name 1 _____

Name 2 _____

Name 3 _____

Name 4 _____

Name 5 _____

SECTION BREAK – Sex Network Generator

SEXINTRO. **Now I am going to ask some questions about sex in the last 6 months, that is since [DATE 6 MONTHS AGO].**

By sex we mean all kinds of sex, including anal, oral and vaginal.

By oral sex, we mean stimulating the genitals with the mouth, that is licking or kissing your partner's genitals or when you partner does this to you.

By anal sex we mean, when your penis is inside your partner's anus or rectum or the partner's penis is inside your anus or rectum.

By vaginal sex we mean when a man's penis is inside a woman's vagina.

6MoSEXN. **Thinking back over the past 6 months, that is since April 29, 2014, how many people, including men, women, and transgender people have you had sexual activity with, even if only one time? How many total different persons in the last 6 months did you have oral, anal, or vaginal sex with? _____**

→If 0, skip to 64

PAGE BREAK

***SEXHIST*. INTERVIEWER USE TIMELINE AID TO MAKE SURE DATES WORK AND OVERLAP IS ACCURATE. USE KEY EVENTS AS NEEDED HELP R ZERO IN ON DATES ["Was that before or after ...]**

Since I need to ask some follow-up questions, can you give me the name of the person you had sex with most recently? (ENTER NAME IN TIME LINE)

LOOP In what month did you most recently have sex with [NAME]? (ENTER 'L' ON TIME LINE)

→ IF NO SEX WITH PARTNER EVER, MOVE ON TO ASKING ABOUT NEXT MOST RECENT SEX PARTNER

In what month did you first have sex with [NAME]? (ENTER 'F' ON TIME LINE)

IF 'F' AND 'L' FOR TWO PEOPLE IS IN THE SAME MONTH: Was the first time you had sex with [NAME B] before or after the last time you had sex with [NAME A]?

UP TO [NUMBER OF PARTNERS LISTED IN *6MoSEXN]* PARTNERS: Who was the person you had sex with most recently before [NAME]? (ENTER NAME AND LOOP)

63. *SexList* List of sex alters – [NUMBER OF DIFFERENT SEX PARTNERS] PARTNERS.

Sex 1 _____

Sex 2 _____

Sex 3 _____

Sex 4 _____

Sex 5 _____

PAGE BREAK

64. Are you currently in a relationship with someone who you consider your primary or main sexual partner?

❍ Yes
❍ No
❍ DK
❍ REF

SECTION BREAK

***65. Dedup.* OK, I have a list of people that you are close to, and a list of people who you had sex with in the last 6 months. Is anyone on both lists?**

IF A PERSON IS LISTED TWICE, CHECK THE FIRST TWO COLUMNS ON THE FIRST LISTING AND CHECK DUPLICATE ON THE SECOND TIME THEIR NAME IS LISTED.

	Sex	Social	Duplicate - DON'T ASK FOLLOW UPS
Sex 1	❍	❍	❍
Sex 2	❍	❍	❍
Sex 3	❍	❍	❍
Sex 4	❍	❍	❍
Sex 5	❍	❍	❍
Name 1	❍	❍	❍
Name 2	❍	❍	❍
Name 3	❍	❍	❍

Name 4	❍	❍	❍
Name 5	❍	❍	❍

SECTION BREAK – Venue Affiliation

VENUEINTRO. Now I will ask about places where men go to meet or socialize, and also where men go for health care and social support.

→If interview takes place in Houston, skips to 66HouCB_HO.

	Yes, heard of it	No, not heard of it	REF
Scarlet	❍	❍	❍
Minibar	❍	❍	❍
Roscoe"s Tavern	❍	❍	❍
Sidetrack Video Bar	❍	❍	❍
Circuit	❍	❍	❍
Jeffrey Pub	❍	❍	❍
School of Opulence	❍	❍	❍
Beauty Bar	❍	❍	❍
Hydrate	❍	❍	❍
Berlin	❍	❍	❍
Big Chicks	❍	❍	❍
D.S. Tequila Company	❍	❍	❍
Steamworks	❍	❍	❍
K Dock Media	❍	❍	❍
Club Escape	❍	❍	❍
Jackson Park	❍	❍	❍
Elixir Lounge	❍	❍	❍
Mary's Attic	❍	❍	❍
Taste Night Club	❍	❍	❍
Rehab Lounge and Cabaret	❍	❍	❍
High Society Entertainment Group	❍	❍	❍
Harold Washington Library	❍	❍	❍
Crew Bar and Grill	❍	❍	❍
East of the Ryan	❍	❍	❍
Jackhammer	❍	❍	❍
The Circle at Garfield Park	❍	❍	❍
Closet	❍	❍	❍
Replay Beer and Bourbon	❍	❍	❍
North End	❍	❍	❍
Macy’s on State Street	❍	❍	❍
Washington Park (along Cottage Grove)	❍	❍	❍

Wangs / Men's Room / Bijou Theatre	❍	❍	❍
Sofo	❍	❍	❍
Rainbow Beach	❍	❍	❍
Bobby Loves	❍	❍	❍
Lucky Horseshoe Lounge	❍	❍	❍
Manhandler Saloon	❍	❍	❍
La Cueva	❍	❍	❍
Dragon Lady Lounge	❍	❍	❍
Progress Bar	❍	❍	❍

66ChiCB_HO. **First, are <u>clubs, bars and other spaces to socialize</u>. Have you heard of…**

66HouCB_HO. **First, are <u>clubs, bars and other spaces to socialize</u>. Have you heard of…**

→Will not display if interview taking place in Chicago

	Yes, heard of it	No, not heard of it	REF
Bayou City Bar & Grill	❍	❍	❍
Berryhill Baja Grill and Cantina	❍	❍	❍
Boheme Café and Wine Bar	❍	❍	❍
Brasil Café	❍	❍	❍
Crocker Bar	❍	❍	❍
EJ's Bar	❍	❍	❍
Guava Lamp Video Lounge	❍	❍	❍
Hollywood Vietnamese Café	❍	❍	❍
JR's Bar & Grill	❍	❍	❍
Meteor	❍	❍	❍
Numbers	❍	❍	❍
The Eagle	❍	❍	❍
Ripcord Leather Bar	❍	❍	❍
Thirteen: The Heights Bar (previously In-n-Out)	❍	❍	❍
Tony's Corner Pocket	❍	❍	❍
Black Hole Coffee House	❍	❍	❍
Inversion Coffee House	❍	❍	❍
McDonald's on Westheimer	❍	❍	❍
Starbucks on Montrose	❍	❍	❍
Blur	❍	❍	❍
Club 2020	❍	❍	❍
Crystal Nightclub	❍	❍	❍
F Bar	❍	❍	❍
South Beach	❍	❍	❍
Bunnies on the Bayou	❍	❍	❍
Houston Splash	❍	❍	❍
LUEY Weekend / The Houston Council of Clubs (HCC), Inc.	❍	❍	❍
Wonderland Houston	❍	❍	❍
Executive Adult Video Superstore	❍	❍	❍
Hollywood Super Center	❍	❍	❍
Whole Foods Market - Montrose	❍	❍	❍
Megaflix (previously Adult Megaplexxx)	❍	❍	❍
Club Houston	❍	❍	❍
Midtowne Spa	❍	❍	❍
611 Hyde Park Pub	❍	❍	❍
After Hours / KPFT	❍	❍	❍

XL / Trade Thursday	❍	❍	❍

PAGE BREAK

***67ChHSS_HO*. Next are some places men go for social services, health services or other support services. Have you heard of...**

→Skips to 67HoHSS_HO if survey taken in Houston

	Yes	No	REF
Night Ministry / THE CRIB	❍	❍	❍
Center on Halsted	❍	❍	❍
Howard Brown Health Center	❍	❍	❍
Test Positive Aware Network	❍	❍	❍
Broadway Youth Center (HBHC)	❍	❍	❍
Brothers Health-Collective	❍	❍	❍
CALOR	❍	❍	❍
Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)	❍	❍	❍
NU Pride at Northeastern University	❍	❍	❍
LGBT Club at Truman College	❍	❍	❍
Taskforce (at the corner of Cicero and Madison)	❍	❍	❍
Advocate at Loyola University	❍	❍	❍
Common Ground Columbia College	❍	❍	❍
Café Pride at Lakeview Presbeytrian Church	❍	❍	❍
LGBT Office at the University of Chicago	❍	❍	❍
Northwestern University LGBT Resource Center	❍	❍	❍
UIC Gender and Sexuality Center	❍	❍	❍
Chicago Metropolitan Sports Association or CMSA	❍	❍	❍
LGBT Office DePaul	❍	❍	❍
Xsport Gym on South State Street	❍	❍	❍
LA Fitness on 47th Street	❍	❍	❍
FFC on Halsted Street	❍	❍	❍
LVAC - Lakeview Athletic Club	❍	❍	❍
Access Community Health Network: Grand Blvd.	❍	❍	❍
Chicago Black Gay Men's Caucus	❍	❍	❍
COIP at UIC	❍	❍	❍
FUEL at The University of Chicago	❍	❍	❍
Vida/SIDA	❍	❍	❍
Cook County Jail (Cook County Dept. of Corrections)	❍	❍	❍
Cook County Juvenile Division	❍	❍	❍
Chicago House	❍	❍	❍
Illinois Caucus for Adolescent Health	❍	❍	❍
Project VIDA	❍	❍	❍
Prologue	❍	❍	❍
The Core Center	❍	❍	❍
AIDS Foundation of Chicago	❍	❍	❍
South Side Help Center	❍	❍	❍

PAGE BREAK

***67HoHSS_HO*. Next are some places men go for <u>social services, health services or other support services.</u> Have you heard of…**

→Does not show if interview is in Chicago

	Yes	No	REF
AIDS Foundation Houston, Inc.	❍	❍	❍
Delta Phi Upsilon Fraternity, Iota Chapter	❍	❍	❍
GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter	❍	❍	❍
Houston Area Community Services (HACS)	❍	❍	❍
Legacy Community Health Services - Lyons clinic	❍	❍	❍
Legacy Community Health Services - Montrose clinic	❍	❍	❍
Legacy Community Health Services - mSociety	❍	❍	❍
LIVE Consortium	❍	❍	❍
Montrose Center (including HATCH Youth)	❍	❍	❍
Out & Equal Houston	❍	❍	❍
PRIDE Houston, Inc.	❍	❍	❍
St. Hope Foundation - Bellaire/Houston Health Care Center	❍	❍	❍
Thomas Street Health Center	❍	❍	❍
University of Houston LGBT Resource Center	❍	❍	❍
24 Hour Midtown	❍	❍	❍
Fit Athletic Club	❍	❍	❍
Freed-Montrose Neighborhood Library	❍	❍	❍
University of Houston GLOBAL	❍	❍	❍
Houston Gaymers	❍	❍	❍
Lambda NextGen Houston	❍	❍	❍
Lone Star College-CyFair GLBTA	❍	❍	❍
National Leather Association - Houston	❍	❍	❍
Grace Lutheran Church	❍	❍	❍
Open Gate Ministries (Bering United Methodist Church)	❍	❍	❍
Progressive Open Door Christian Center (including Fresh Start Community Haven)	❍	❍	❍
Resurrection Metropolitan Community Church	❍	❍	❍
Unity Church of Christianity	❍	❍	❍
Houston Hurricanes (Football)	❍	❍	❍
Houston Tennis Club	❍	❍	❍
Lone Star Volleyball Association	❍	❍	❍
Montrose Softball League	❍	❍	❍
St. Hope Foundation - B.R.O. IV Life Prevention Services	❍	❍	❍
Montrose Grace Place	❍	❍	❍
Covenant House (including clinic)	❍	❍	❍
Harris County Juvenile Detention Center	❍	❍	❍
Harris County Jail	❍	❍	❍

PAGE BREAK

68SA_HO. **Finally, some online sites and apps. Have you heard of...**

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

PAGE BREAK

69ChiCBVis. **Just like we did at your last visits, I would like to go through a list of venues and ask whether you have been there in the last twelve months. First, clubs and bars. In the last 12 months have you been to...**

→If interview in Houston, skips to 69HouCBVis

→Table will show ONLY those clubs and bars that respondent reported having heard of

→If had heard of no clubs or bars, will skip to *70CB_NONE*

	Yes	No	REF
Scarlet	❍	❍	❍
Minibar	❍	❍	❍
Roscoe"s Tavern	❍	❍	❍
Sidetrack Video Bar	❍	❍	❍
Circuit	❍	❍	❍
Jeffrey Pub	❍	❍	❍
School of Opulence	❍	❍	❍
Beauty Bar	❍	❍	❍
Hydrate	❍	❍	❍
Berlin	❍	❍	❍
Big Chicks	❍	❍	❍
D.S. Tequila Company	❍	❍	❍
Steamworks	❍	❍	❍
K Dock Media	❍	❍	❍
Club Escape	❍	❍	❍
Jackson Park	❍	❍	❍
Elixir Lounge	❍	❍	❍
Mary's Attic	❍	❍	❍
Taste Night Club	❍	❍	❍
Rehab Lounge and Cabaret	❍	❍	❍
High Society Entertainment Group	❍	❍	❍
Harold Washington Library	❍	❍	❍
Crew Bar and Grill	❍	❍	❍
East of the Ryan	❍	❍	❍
Jackhammer	❍	❍	❍
The Circle at Garfield Park	❍	❍	❍
Closet	❍	❍	❍
Replay Beer and Bourbon	❍	❍	❍
North End	❍	❍	❍
Macy’s on State Street	❍	❍	❍
Washington Park (along Cottage Grove)	❍	❍	❍
Wangs / Men's Room / Bijou Theatre	❍	❍	❍
Sofo	❍	❍	❍

Rainbow Beach	❍	❍	❍
Bobby Loves	❍	❍	❍
Lucky Horseshoe Lounge	❍	❍	❍
Manhandler Saloon	❍	❍	❍
La Cueva	❍	❍	❍
Dragon Lady Lounge	❍	❍	❍
Progress Bar	❍	❍	❍

PAGE BREAK

***69HouCBVis*. Now, I would like to go back through the places that you have heard of and ask whether you have been there in the last twelve months. First, clubs and bars. In the last 12 months have you been to ...**

→If interview in Chicago, this question will not show

→Table below will show ONLY those clubs and bars that respondent reported having heard of. If had heard of no clubs or bars, will skip to *72HoHSSVis*

	Yes	No	REF
Bayou City Bar & Grill	❍	❍	❍
Berryhill Baja Grill and Cantina	❍	❍	❍
Boheme Café and Wine Bar	❍	❍	❍
Brasil Café	❍	❍	❍
Crocker Bar	❍	❍	❍
EJ's Bar	❍	❍	❍
Guava Lamp Video Lounge	❍	❍	❍
Hollywood Vietnamese Café	❍	❍	❍
JR's Bar & Grill	❍	❍	❍
Meteor	❍	❍	❍
Numbers	❍	❍	❍
The Eagle	❍	❍	❍
Ripcord Leather Bar	❍	❍	❍
Thirteen: The Heights Bar (previously In-n-Out)	❍	❍	❍
Tony's Corner Pocket	❍	❍	❍
Black Hole Coffee House	❍	❍	❍
Inversion Coffee House	❍	❍	❍
McDonald's on Westheimer	❍	❍	❍
Starbucks on Montrose	❍	❍	❍
Blur	❍	❍	❍
Club 2020	❍	❍	❍
Crystal Nightclub	❍	❍	❍
F Bar	❍	❍	❍
South Beach	❍	❍	❍
Bunnies on the Bayou	❍	❍	❍
Houston Splash	❍	❍	❍
LUEY Weekend / The Houston Council of Clubs (HCC), Inc.	❍	❍	❍
Wonderland Houston	❍	❍	❍
Executive Adult Video Superstore	❍	❍	❍
Hollywood Super Center	❍	❍	❍
Whole Foods Market - Montrose	❍	❍	❍
Megaflix (previously Adult Megaplexxx)	❍	❍	❍
Club Houston	❍	❍	❍
Midtowne Spa	❍	❍	❍
611 Hyde Park Pub	❍	❍	❍
After Hours / KPFT	❍	❍	❍
XL / Trade Thursday	❍	❍	❍

PAGE BREAK

70CB_NONE. You said that you hadn't heard of any of the clubs or bars that I listed earlier, are there...
→This prologue is skipped if respondent states that had heard of any of the listed clubs or bars

71CB_OTH. Any other clubs or bars that you have gone to in order to meet or socialize with other men in the past 12 months? _____
→This question is shown to all respondents.
[TYPE IN THE NAMES OF ALL OTHER PLACES RESPONDENT LISTS VERBATIM. IF NONE, LEAVE BLANK. IF MORE THAN 5, LIST MULTIPLE IN FIELD 5]

Additional place 1	
Additional place 2	
Additional place 3	
Additional place 4	
Additional place 5	

PAGE BREAK

***72ChHSSVis*. Next the health and support locations you have been to. In the last 12 months have you been to ...**

→If interview in Houston, skips to *72HoHSSVis*

→Table shows only locations R has heard of. If heard of none, skips to *73HSS_NONE*.

	Yes	No	REF
Night Ministry / THE CRIB	❍	❍	❍
Center on Halsted	❍	❍	❍
Howard Brown Health Center	❍	❍	❍
Test Positive Aware Network	❍	❍	❍
Broadway Youth Center (HBHC)	❍	❍	❍
Brothers Health-Collective	❍	❍	❍
CALOR	❍	❍	❍
Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)	❍	❍	❍
NU Pride at Northeastern University	❍	❍	❍
LGBT Club at Truman College	❍	❍	❍
Taskforce (at the corner of Cicero and Madison)	❍	❍	❍
Advocate at Loyola University	❍	❍	❍
Common Ground Columbia College	❍	❍	❍
Café Pride at Lakeview Presbeytrian Church	❍	❍	❍
LGBT Office at the University of Chicago	❍	❍	❍
Northwestern University LGBT Resource Center	❍	❍	❍
UIC Gender and Sexuality Center	❍	❍	❍
Chicago Metropolitan Sports Association or CMSA	❍	❍	❍
LGBT Office DePaul	❍	❍	❍
Xsport Gym on South State Street	❍	❍	❍
LA Fitness on 47th Street	❍	❍	❍
FFC on Halsted Street	❍	❍	❍
LVAC - Lakeview Athletic Club	❍	❍	❍
Access Community Health Network: Grand Blvd.	❍	❍	❍
Chicago Black Gay Men's Caucus	❍	❍	❍
COIP at UIC	❍	❍	❍
FUEL at The University of Chicago	❍	❍	❍
Vida/SIDA	❍	❍	❍
Cook County Jail (Cook County Dept. of Corrections)	❍	❍	❍
Cook County Juvenile Division	❍	❍	❍
Chicago House	❍	❍	❍
Illinois Caucus for Adolescent Health	❍	❍	❍
Project VIDA	❍	❍	❍
Prologue	❍	❍	❍
The Core Center	❍	❍	❍
AIDS Foundation of Chicago	❍	❍	❍
South Side Help Center	❍	❍	❍

PAGE BREAK

72HoHSSVis. **Next the health and support locations you have been to. In the last 12 months have you been to ...**

→If interview in Chicago, this question will not show

→Table shows only locations R had heard of. If heard of none, skips to *73HSS_NONE*.

	Yes	No	REF
AIDS Foundation Houston, Inc.	❍	❍	❍
Delta Phi Upsilon Fraternity, Iota Chapter	❍	❍	❍
GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter	❍	❍	❍
Houston Area Community Services (HACS)	❍	❍	❍
Legacy Community Health Services - Lyons clinic	❍	❍	❍
Legacy Community Health Services - Montrose clinic	❍	❍	❍
Legacy Community Health Services - mSociety	❍	❍	❍
LIVE Consortium	❍	❍	❍
Montrose Center (including HATCH Youth)	❍	❍	❍
Out & Equal Houston	❍	❍	❍
PRIDE Houston, Inc.	❍	❍	❍
St. Hope Foundation - Bellaire/Houston Health Care Center	❍	❍	❍
Thomas Street Health Center	❍	❍	❍
University of Houston LGBT Resource Center	❍	❍	❍
24 Hour Midtown	❍	❍	❍
Fit Athletic Club	❍	❍	❍
Freed-Montrose Neighborhood Library	❍	❍	❍
University of Houston GLOBAL	❍	❍	❍
Houston Gaymers	❍	❍	❍
Lambda NextGen Houston	❍	❍	❍
Lone Star College-CyFair GLBTA	❍	❍	❍
National Leather Association - Houston	❍	❍	❍
Grace Lutheran Church	❍	❍	❍
Open Gate Ministries (Bering United Methodist Church)	❍	❍	❍
Progressive Open Door Christian Center (including Fresh Start Community Haven)	❍	❍	❍
Resurrection Metropolitan Community Church	❍	❍	❍
Unity Church of Christianity	❍	❍	❍
Houston Hurricanes (Football)	❍	❍	❍
Houston Tennis Club	❍	❍	❍
Lone Star Volleyball Association	❍	❍	❍
Montrose Softball League	❍	❍	❍
St. Hope Foundation - B.R.O. IV Life Prevention Services	❍	❍	❍
Montrose Grace Place	❍	❍	❍
Covenant House (including clinic)	❍	❍	❍
Harris County Juvenile Detention Center	❍	❍	❍
Harris County Jail	❍	❍	❍

PAGE BREAK

***73HSS_NONE*. You said that you hadn't heard of any of the health care or social support locations that I listed earlier, are there...**

→This statement shows only if respondent states that had not heard of any of the listed clubs or bars on the same page as the next question.

***74HSS_OTH*. Any other places you have gone for health care or social support in the past 12 months?**

→This question shows to all respondents.

[TYPE IN THE NAMES OF ALL OTHER PLACES RESPONDENT LISTS VERBATIM. IF NONE, LEAVE BLANK. IF MORE THAN 5, LIST MULTIPLE IN FIELD 5]

Additional place 1	
Additional place 2	
Additional place 3	
Additional place 4	
Additional place 5	

PAGE BREAK

75SA_Visit. **And now the websites and apps you have used. In the past 12 months have you been to the website or used the app ...**
→Table below will show ONLY those websites and apps that respondent reported having heard of. If had heard of no support locations, will skip to *76SA_NONE*

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

PAGE BREAK

76SA_NONE. You said that you hadn't heard of any of the sites or apps that I listed earlier, are there...
→This statement shows only if respondent states that had not heard of any of the listed clubs or bars on the same page as the next question.

77SA_OTH. **Any other sites or apps you have used to meet or socialize with other men in the past 12 months?**_____
→This question shows to all respondents.

[TYPE IN THE NAMES OF ALL OTHER APPS / WEBSITES RESPONDENT LISTS VERBATIM.
IF NONE, LEAVE BLANK. IF MORE THAN 5, LIST MULTIPLE IN FIELD 5]

Additional app / website 1	
Additional app / website 2	
Additional app / website 3	
Additional app / website 4	

Additional app / website 5 [ ]

77.1. [CARD F] Now think about apps that use your location, apps such as Grindr, Jack'D, Scruff or any similar app. Using Card F, while you are at any of the places we've discussed, how often do you use apps to meet people in the last 12 months?

- ❍ 1 - Always
- ❍ 2 - Usually
- ❍ 3 - Sometimes
- ❍ 4 - Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

77.2. [CARD F] Now think about social media such as Facebook, Twitter, Instagram, or any similar programs. Using Card F, while you are at any of the places we've discussed, how often do you use social media in the last 12 months?

- ❍ 1 - Always
- ❍ 2 - Usually
- ❍ 3 - Sometimes
- ❍ 4 - Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

PAGE BREAK

***HANDTO3* PASS iPAD TO RESPONDENT FOR SELF-ADMINISTERED SECTION.**

PAGE BREAK

***ChiNotGo1*. Now I want to go through the clubs and bars and ask you if, . regardless of the reason, are any you would <u>not</u> want to go to or <u>not</u> want to go back to?**
Check the box next to each place you would <u>not</u> want to go or return to.
→Online version skips to *HousNotGo2* for those in Houston.
→List shows ONLY the listed bars and clubs R heard of.
→If R has visited none of the bars and clubs, skips to ChiNotGo2.

- ❒ Scarlet
- ❒ Minibar
- ❒ Roscoe"s Tavern
- ❒ Sidetrack Video Bar
- ❒ Circuit
- ❒ Jeffrey Pub
- ❒ School of Opulence
- ❒ Beauty Bar
- ❒ Hydrate
- ❒ Berlin
- ❒ Big Chicks
- ❒ D.S. Tequila Company
- ❒ Steamworks
- ❒ K Dock Media
- ❒ Club Escape
- ❒ Jackson Park
- ❒ Elixir Lounge
- ❒ Mary's Attic
- ❒ Taste Night Club
- ❒ Rehab Lounge and Cabaret
- ❒ High Society Entertainment Group
- ❒ Harold Washington Library
- ❒ Crew Bar and Grill
- ❒ East of the Ryan
- ❒ Jackhammer
- ❒ The Circle at Garfield Park
- ❒ Closet
- ❒ Replay Beer and Bourbon
- ❒ North End
- ❒ Macy’s on State Street
- ❒ Washington Park (along Cottage Grove)
- ❒ Wangs / Men's Room / Bijou Theatre
- ❒ Sofo
- ❒ Rainbow Beach
- ❒ Bobby Loves
- ❒ Lucky Horseshoe Lounge
- ❒ Manhandler Saloon
- ❒ La Cueva
- ❒ Dragon Lady Lounge
- ❒ Progress Bar

PAGE BREAK

→Online version skips to *HousNotGo2* for those in Houston.

***ChiNotGo2*. Next, the health and support locations you have heard of or been to: Regardless of the reason, are there any you would <u>not</u> want to go to or <u>not</u> want to go back to?**

Check the box next to each place you would <u>not</u> want to go or return to.

→List shows ONLY the listed support services that respondent has heard of.

→Question will not show for those who have heard of none.

- ❒ Night Ministry / THE CRIB
- ❒ Center on Halsted
- ❒ Howard Brown Health Center
- ❒ Test Positive Aware Network
- ❒ Broadway Youth Center (HBHC)
- ❒ Brothers Health-Collective
- ❒ CALOR
- ❒ Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)
- ❒ NU Pride at Northeastern University
- ❒ LGBT Club at Truman College
- ❒ Taskforce (at the corner of Cicero and Madison)
- ❒ Advocate at Loyola University
- ❒ Common Ground Columbia College
- ❒ Café Pride at Lakeview Presbeytrian Church
- ❒ LGBT Office at the University of Chicago
- ❒ Northwestern University LGBT Resource Center
- ❒ UIC Gender and Sexuality Center
- ❒ Chicago Metropolitan Sports Association or CMSA
- ❒ LGBT Office DePaul
- ❒ Xsport Gym on South State Street
- ❒ LA Fitness on 47th Street
- ❒ FFC on Halsted Street
- ❒ LVAC - Lakeview Athletic Club
- ❒ Access Community Health Network: Grand Blvd.
- ❒ Chicago Black Gay Men's Caucus
- ❒ COIP at UIC
- ❒ FUEL at The University of Chicago
- ❒ Vida/SIDA
- ❒ Cook County Jail (Cook County Dept. of Corrections)
- ❒ Cook County Juvenile Division
- ❒ Chicago House
- ❒ Illinois Caucus for Adolescent Health
- ❒ Project VIDA
- ❒ Prologue
- ❒ The Core Center
- ❒ AIDS Foundation of Chicago
- ❒ South Side Help Center

PAGE BREAK

***HousNotGo1*. Now I want to go through the clubs and bars you have heard of or been to. Regardless of the reason, are any you would <u>not</u> want to go to or <u>not</u> want to go back to? Check the box next to each place you would <u>not</u> want to go or return to.**

→Online version skips this for Chicago respondents.

→List shows ONLY bars and clubs that respondent has heard of.
→Question will not show for those who have heard of none.

- ❒ Bayou City Bar & Grill
- ❒ Berryhill Baja Grill and Cantina
- ❒ Boheme Café and Wine Bar
- ❒ Brasil Café
- ❒ Crocker Bar
- ❒ EJ's Bar
- ❒ Guava Lamp Video Lounge
- ❒ Hollywood Vietnamese Café
- ❒ JR's Bar & Grill
- ❒ Meteor
- ❒ Numbers
- ❒ The Eagle
- ❒ Ripcord Leather Bar
- ❒ Thirteen: The Heights Bar (previously In-n-Out)
- ❒ Tony's Corner Pocket
- ❒ Black Hole Coffee House
- ❒ Inversion Coffee House
- ❒ McDonald's on Westheimer
- ❒ Starbucks on Montrose
- ❒ Blur
- ❒ Club 2020
- ❒ Crystal Nightclub
- ❒ F Bar
- ❒ South Beach
- ❒ Bunnies on the Bayou
- ❒ Houston Splash
- ❒ LUEY Weekend / The Houston Council of Clubs (HCC), Inc.
- ❒ Wonderland Houston
- ❒ Executive Adult Video Superstore
- ❒ Hollywood Super Center
- ❒ Whole Foods Market - Montrose
- ❒ Megaflix (previously Adult Megaplexxx)
- ❒ Club Houston
- ❒ Midtowne Spa
- ❒ 611 Hyde Park Pub
- ❒ After Hours / KPFT
- ❒ XL / Trade Thursday

PAGE BREAK

HousNotGo2. **Next, the health and support locations you have heard of or been to: Regardless of the reason, are there any you would <u>not</u> want to go to or <u>not</u> want to go back to?**
Check the box next to each place you would <u>not</u> want to go or return to.
→List shows ONLY support services that respondent has heard of.
→Question will not show for those who have heard of none.

- ❒ AIDS Foundation Houston, Inc.
- ❒ Delta Phi Upsilon Fraternity, Iota Chapter
- ❒ GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter
- ❒ Houston Area Community Services (HACS)
- ❒ Legacy Community Health Services - Lyons clinic
- ❒ Legacy Community Health Services - Montrose clinic
- ❒ Legacy Community Health Services - mSociety
- ❒ LIVE Consortium
- ❒ Montrose Center (including HATCH Youth)
- ❒ Out & Equal Houston
- ❒ PRIDE Houston, Inc.
- ❒ St. Hope Foundation - Bellaire/Houston Health Care Center
- ❒ Thomas Street Health Center
- ❒ University of Houston LGBT Resource Center
- ❒ 24 Hour Midtown
- ❒ Fit Athletic Club
- ❒ Freed-Montrose Neighborhood Library
- ❒ University of Houston GLOBAL
- ❒ Houston Gaymers
- ❒ Lambda NextGen Houston
- ❒ Lone Star College-CyFair GLBTA
- ❒ National Leather Association - Houston
- ❒ Grace Lutheran Church
- ❒ Open Gate Ministries (Bering United Methodist Church)
- ❒ Progressive Open Door Christian Center (including Fresh Start Community Haven)
- ❒ Resurrection Metropolitan Community Church
- ❒ Unity Church of Christianity
- ❒ Houston Hurricanes (Football)
- ❒ Houston Tennis Club
- ❒ Lone Star Volleyball Association
- ❒ Montrose Softball League
- ❒ St. Hope Foundation - B.R.O. IV Life Prevention Services
- ❒ Montrose Grace Place
- ❒ Covenant House (including clinic)
- ❒ Harris County Juvenile Detention Center
- ❒ Harris County Jail

PAGE BREAK

WebNotGo. **And now the websites and apps you have heard of or used: Regardless of the reason, are there any you would <u>not</u> want to use or <u>not</u> want to use again?**

Check the box next to each website or app you would <u>not</u> want to use or use again.
→List shows ONLY websites and apps that respondent has heard of.

→Question will not show for those who have heard of none.

- ❒ Adam4Adam, Adam4Adam Radar
- ❒ BGC, Black Gay Chat
- ❒ Craigslist
- ❒ Facebook
- ❒ Grindr
- ❒ Growlr
- ❒ Hornet
- ❒ Instagram
- ❒ JackD
- ❒ OKcupid
- ❒ Scruff
- ❒ Twitter
- ❒ Tinder
- ❒ Thugs4Sex

PAGE BREAK

HANDBACK3. PLEASE PASS THE iPAD BACK TO THE INTERVIEWER.

PAGE BREAK

VENUETRANS. **Next I will ask you some questions about some of your experiences at the locations you have been to in the last 12 months.**

SECTION BREAK – Chicago or Houston Venue Drilldowns, Clubs and Bars

→In the online survey, this set of questions will repeat for every bar/club R has gone to in past 12 months. For a paper equivalent, see Appendix A, which includes a table in which you can write the respondent's responses for each venue.

78CB_VDD1C or 78CB_VDD1H . **Using Card G, how often have you gone to [NAME OF BAR/CLUB] in the past 12 months?**

- ❍ 1 - Every day
- ❍ 2 - Several times a week
- ❍ 3 - Once a week
- ❍ 4 - Once every two weeks
- ❍ 5 - Once a month
- ❍ 6 - A couple of times a year
- ❍ 7 - Once a year
- ❍ DK
- ❍ REF

79CB_VDD2. **When was the first time you went to [NAME OF BAR/CLUB]?**

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

80CB_VDD3. **What days of the week do you usually go to [NAME OF BAR/CLUB]?**

- ❑ Monday
- ❑ Tuesday
- ❑ Wednesday
- ❑ Thursday
- ❑ Friday
- ❑ Saturday
- ❑ Sunday
- ❑ No particular day

SECTION BREAK - Venue Drilldowns, Health and Support

→In the online survey, this set of questions will repeat for every health/support location R has gone to in past 12 months. For a paper equivalent, see Appendix B, which includes a table in which you can write the respondent's responses for each venue.

81HS_VDD1. **Using Card G, how often have you gone to [NAME OF HEALTH/SUPPORT LOCATION] in the past 12 months?**

- ❍ 1 - Every day
- ❍ 2 - Several times a week
- ❍ 3 - Once a week
- ❍ 4 - Once every two weeks
- ❍ 5 - Once a month
- ❍ 6 - A couple of times a year
- ❍ 7 - Once a year
- ❍ DK
- ❍ REF

82HS_VDD2. **When was the first time you went to used [NAME OF HEALTH/SUPPORT LOCATION]?**
Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

83HS_VDD3. **What days of the week do you usually go to [NAME OF HEALTH/SUPPORT LOCATION]?**
- ❑ Monday
- ❑ Tuesday
- ❑ Wednesday
- ❑ Thursday
- ❑ Friday
- ❑ Saturday
- ❑ Sunday
- ❑ No particular day

SECTION BREAK – Drill Downs, Apps and Websites

84SA_VDD1. **Using Card G, how often have you used [NAME OF APP/WEBSITE] in the past 12 months?**
- ❍ 1 - Every day
- ❍ 2 - Several times a week
- ❍ 3 - Once a week
- ❍ 4 - Once every two weeks
- ❍ 5 - Once a month
- ❍ 6 - A couple of times a year
- ❍ 7 - Once a year
- ❍ DK
- ❍ REF

85SA_VDD2. **When was the first time you used [NAME OF APP/WEBSITE]?**
Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

86SA_VDD3. **What days of the week do you usually get on [NAME OF APP/WEBSITE]?**

- ❑ Monday
- ❑ Tuesday
- ❑ Wednesday
- ❑ Thursday
- ❑ Friday
- ❑ Saturday
- ❑ Sunday
- ❑ No particular day

SECTION BREAK – Break Time

BREAKTIME

This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

ENDPART1. **This is the end of Part I. We will now take a short break.**

SECTION BREAK – Biometrics

BIOINTRO. **To ensure that each participant in our study enrolls only once, we are collecting measurements that are unique to you. These include measuring your height, weight, shoulder width and waist circumference. All of these measurements will be recorded for our records for research purposes, but will not be given to anybody else.**

PAGE BREAK

HT_INTRO.

- **Ask R to remove his shoes**
- **Have R stand straight against wall in front of the tape measure, feet together, heels against the wall, eyes looking forward. R must be standing in a vertical plane**
- **Place clipboard on top of R's head with shorter edge vertical against the tape measure, forming 90 degree angle**
- **Take measurement to the nearest centimeter where clipboard hits the measuring tape**
- **Have R step away from wall**
- **Record height to the nearest centimeter**

87.1HEIGHT. **Height in centimeters**

ENTER '0' IF REFUSED

Centimeters:_____

PAGE BREAK

***87.3HEIGHT*. Height outcome:**

- ❍ Height recorded
- ❍ R could not physically stand
- ❍ R refused to be measured
- ❍ Equipment problem
- ❍ Tried, unable to do

***HT_NOTES*. Height notes:**

PAGE BREAK

WT_INTRO.

- **Double check scale is switched to lbs.**
- **Place scale on flat, non-carpeted surface**
- **Allow the scale to zero**
- **Ask R to remove shoes**
- **Ask R to stand on scale**
- **When readout is stable, record weight**

88.1WEIGHT. **Weight in pounds**

ENTER '0' IF REFUSED

Pounds:_____

PAGE BREAK

88.3WEIGHT. **Weight outcome:**

❍ Weight recorded
❍ R could not physically stand on scale
❍ R refused to stand on scale
❍ Equipment problem
❍ Tried, unable to do

WT_NOTES. **Weight notes:**

PAGE BREAK

WS_INTRO.

- **Have R stand straight with feet together**
- **Have R relax arms and stomach and breathe normally**
- **Ask R to point to navel**
- **Estimate the natural waist at the narrowest part of the torso just above the navel. In overweight individuals measure just above the navel, even when their waist is the widest part of the torso.**
- **Tell R you will reach around him.**
- **Place measuring tape evenly around the waist**
- **Make sure the tape is straight and not twisted or compressing the tissue**
- **Record waist to the nearest half centimeter (###.#)**

89.1WAIST. **Waist in centimeters**

ENTER '0' IF REFUSED

Centimeters:_____

PAGE BREAK

89.3WAIST. **Waist outcome:**

- ❍ Waist circumference recorded
- ❍ R refused to provide measurement
- ❍ Equipment problem
- ❍ Tried, unable to do

WS_NOTES. **Waist notes:**

PAGE BREAK

SH_INTRO.

- **Have R stand straight with head erect and feet together**
- **Ask R to remove bulky clothing from around shoulders**
- **Have R relax arms and let them hang naturally at side**
- **Stand behind R**
- **Tell R you will run your hands from base of neck to tips of each shoulder**
- **Estimate widest part of shoulders (deltoid muscles just above armpits)**
- **Position one end of the measuring tape at widest part of left shoulder**
- **Holding tape in place on left shoulder, extend across back of widest part of shoulder.**
- **Tape should be snug but not compressing tissue, and should be straight and run parallel to the floor**
- **Record shoulder width to the nearest half-centimeter**

90.1SHLDR. **Waist in centimeters**

ENTER '0' IF REFUSED

Centimeters:_____

PAGE BREAK

***90.3SHLDR*. Shoulder measurement outcome:**

- ❍ Shoulder width recorded
- ❍ R refused to provide shoulder measurement
- ❍ Equipment problem
- ❍ Tried, unable to do

***SH_NOTES*. Shoulder notes:**

PAGE BREAK

***SNACK*. DATA COLLECTOR GIVES PARTICIPANT A SNACK.**

PAGE BREAK

PART2INTRO. We will now continue with the second part of the interview.

SECTION BREAK – Chicago Venues Visited with Sex Partners

***V_AINTRO*. Next I have some questions about some of the bars and clubs you have been to with the people we listed. I will go through each person and ask whether you have been to each place with that person.**

→The online survey will loop this series of questions that ask if R has been to the clubs/bars, health/support locations, or has interacted on an app or website with each person the respondent listed as a sexual partner. A paper version of these questions could be completed by duplicating Appendix D and completing the tables for all listed sexual partners.

89CB_ALTC. **In the last 12 months, Have you been to _____ with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK]?**

→Online survey skips this question if R has not been to a listed club/bar in the past 12 months

→The online survey will skip to Houston options for those taking the survey in Houston

	Yes	No	REF
Scarlet	❍	❍	❍
Minibar	❍	❍	❍
Roscoe"s Tavern	❍	❍	❍
Sidetrack Video Bar	❍	❍	❍
Circuit	❍	❍	❍
Jeffrey Pub	❍	❍	❍
School of Opulence	❍	❍	❍
Beauty Bar	❍	❍	❍
Hydrate	❍	❍	❍
Berlin	❍	❍	❍
Big Chicks	❍	❍	❍
D.S. Tequila Company	❍	❍	❍
Steamworks	❍	❍	❍
K Dock Media	❍	❍	❍
Club Escape	❍	❍	❍
Jackson Park	❍	❍	❍
Elixir Lounge	❍	❍	❍
Mary's Attic	❍	❍	❍
Taste Night Club	❍	❍	❍
Rehab Lounge and Cabaret	❍	❍	❍
High Society Entertainment Group	❍	❍	❍
Harold Washington Library	❍	❍	❍
Crew Bar and Grill	❍	❍	❍
East of the Ryan	❍	❍	❍
Jackhammer	❍	❍	❍
The Circle at Garfield Park	❍	❍	❍
Closet	❍	❍	❍
Replay Beer and Bourbon	❍	❍	❍
North End	❍	❍	❍
Macy’s on State Street	❍	❍	❍
Washington Park (along Cottage Grove)	❍	❍	❍
Wangs / Men's Room / Bijou Theatre	❍	❍	❍
Sofo	❍	❍	❍
Rainbow Beach	❍	❍	❍

Bobby Loves	❍	❍	❍
Lucky Horseshoe Lounge	❍	❍	❍
Manhandler Saloon	❍	❍	❍
La Cueva	❍	❍	❍
Dragon Lady Lounge	❍	❍	❍
Progress Bar	❍	❍	❍

90HSS_ALTC. **In the last 12 months, Have you been to _____ with [NAME FROM LIST OF SEX PARTNERS]?**

→Online survey skips this question if R has not been to a listed health and support location in the past 12 months
→Those in Houston skip to Q479

	Yes	No	REF
Night Ministry / THE CRIB	❍	❍	❍
Center on Halsted	❍	❍	❍
Howard Brown Health Center	❍	❍	❍
Test Positive Aware Network	❍	❍	❍
Broadway Youth Center (HBHC)	❍	❍	❍
Brothers Health-Collective	❍	❍	❍
CALOR	❍	❍	❍
Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)	❍	❍	❍
NU Pride at Northeastern University	❍	❍	❍
LGBT Club at Truman College	❍	❍	❍
Taskforce (at the corner of Cicero and Madison)	❍	❍	❍
Advocate at Loyola University	❍	❍	❍
Common Ground Columbia College	❍	❍	❍
Café Pride at Lakeview Presbeytrian Church	❍	❍	❍
LGBT Office at the University of Chicago	❍	❍	❍
Northwestern University LGBT Resource Center	❍	❍	❍
UIC Gender and Sexuality Center	❍	❍	❍
Chicago Metropolitan Sports Association or CMSA	❍	❍	❍
LGBT Office DePaul	❍	❍	❍
Xsport Gym on South State Street	❍	❍	❍
LA Fitness on 47th Street	❍	❍	❍
FFC on Halsted Street	❍	❍	❍
LVAC - Lakeview Athletic Club	❍	❍	❍
Access Community Health Network: Grand Blvd.	❍	❍	❍
Chicago Black Gay Men's Caucus	❍	❍	❍
COIP at UIC	❍	❍	❍
FUEL at The University of Chicago	❍	❍	❍
Vida/SIDA	❍	❍	❍
Cook County Jail (Cook County Dept. of Corrections)	❍	❍	❍
Cook County Juvenile Division	❍	❍	❍
Chicago House	❍	❍	❍
Illinois Caucus for Adolescent Health	❍	❍	❍
Project VIDA	❍	❍	❍
Prologue	❍	❍	❍
The Core Center	❍	❍	❍
AIDS Foundation of Chicago	❍	❍	❍
South Side Help Center	❍	❍	❍

PAGE BREAK

91SA_ALTC. **In the last 12 months, Have you interacted with [NAME FROM LIST OF SEX PARTNERS] on_____ ?**

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

SECTION BREAK - Houston Venues Visited with Sex Partners

V_AINTRO. **Next I have some questions about some of the bars and clubs you have been to with the people we listed. I will go through each person and ask whether you have been to each place with that person.**

→If respondent in Chicago, the three questions below will be skipped.
→Lists will only include venues that R has visited in the past 12 months

***89CB_ALTH*. Have you been to _____ with [NAME FROM LIST OF SEX PARTNERS]?**

→Question skipped if R has not been to a listed bar/club in the past 12 months

	Yes	No	REF
Bayou City Bar & Grill	❍	❍	❍
Berryhill Baja Grill and Cantina	❍	❍	❍
Boheme Café and Wine Bar	❍	❍	❍
Brasil Café	❍	❍	❍
Crocker Bar	❍	❍	❍
EJ's Bar	❍	❍	❍
Guava Lamp Video Lounge	❍	❍	❍
Hollywood Vietnamese Café	❍	❍	❍
JR's Bar & Grill	❍	❍	❍
Meteor	❍	❍	❍
Numbers	❍	❍	❍
The Eagle	❍	❍	❍
Ripcord Leather Bar	❍	❍	❍
Thirteen: The Heights Bar (previously In-n-Out)	❍	❍	❍
Tony's Corner Pocket	❍	❍	❍
Black Hole Coffee House	❍	❍	❍
Inversion Coffee House	❍	❍	❍
McDonald's on Westheimer	❍	❍	❍
Starbucks on Montrose	❍	❍	❍
Blur	❍	❍	❍
Club 2020	❍	❍	❍
Crystal Nightclub	❍	❍	❍
F Bar	❍	❍	❍
South Beach	❍	❍	❍
Bunnies on the Bayou	❍	❍	❍
Houston Splash	❍	❍	❍
LUEY Weekend / The Houston Council of Clubs (HCC), Inc.	❍	❍	❍
Wonderland Houston	❍	❍	❍
Executive Adult Video Superstore	❍	❍	❍
Hollywood Super Center	❍	❍	❍
Whole Foods Market - Montrose	❍	❍	❍
Megaflix (previously Adult Megaplexxx)	❍	❍	❍
Club Houston	❍	❍	❍
Midtowne Spa	❍	❍	❍
611 Hyde Park Pub	❍	❍	❍
After Hours / KPFT	❍	❍	❍
XL / Trade Thursday	❍	❍	❍

***90HSS_ALTH*. Have you been to _____ with [NAME FROM LIST OF SEX PARTNERS]?**

→Skipped if R has not been to a listed health/support location in the past 12 months

	Yes	No	REF
AIDS Foundation Houston, Inc.	❍	❍	❍
Delta Phi Upsilon Fraternity, Iota Chapter	❍	❍	❍
GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter	❍	❍	❍
Houston Area Community Services (HACS)	❍	❍	❍
Legacy Community Health Services - Lyons clinic	❍	❍	❍
Legacy Community Health Services - Montrose clinic	❍	❍	❍
Legacy Community Health Services - mSociety	❍	❍	❍
LIVE Consortium	❍	❍	❍
Montrose Center (including HATCH Youth)	❍	❍	❍
Out & Equal Houston	❍	❍	❍
PRIDE Houston, Inc.	❍	❍	❍
St. Hope Foundation - Bellaire/Houston Health Care Center	❍	❍	❍
Thomas Street Health Center	❍	❍	❍
University of Houston LGBT Resource Center	❍	❍	❍
24 Hour Midtown	❍	❍	❍
Fit Athletic Club	❍	❍	❍
Freed-Montrose Neighborhood Library	❍	❍	❍
University of Houston GLOBAL	❍	❍	❍
Houston Gaymers	❍	❍	❍
Lambda NextGen Houston	❍	❍	❍
Lone Star College-CyFair GLBTA	❍	❍	❍
National Leather Association - Houston	❍	❍	❍
Grace Lutheran Church	❍	❍	❍
Open Gate Ministries (Bering United Methodist Church)	❍	❍	❍
Progressive Open Door Christian Center (including Fresh Start Community Haven)	❍	❍	❍
Resurrection Metropolitan Community Church	❍	❍	❍
Unity Church of Christianity	❍	❍	❍
Houston Hurricanes (Football)	❍	❍	❍
Houston Tennis Club	❍	❍	❍
Lone Star Volleyball Association	❍	❍	❍
Montrose Softball League	❍	❍	❍
St. Hope Foundation - B.R.O. IV Life Prevention Services	❍	❍	❍
Montrose Grace Place	❍	❍	❍
Covenant House (including clinic)	❍	❍	❍
Harris County Juvenile Detention Center	❍	❍	❍
Harris County Jail	❍	❍	❍

***91SA_ALTH*. Have you interacted with [NAME FROM LIST OF SEX PARTNERS] on_____ ?**

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

SECTION BREAK

→The online survey will loop the next series of questions about R's relationship to each listed sexual partners and people who R is close to.

AltersAll. Now I have some more questions about the people you have listed.

***92RelCodes.* Please look at Card H and tell me the number of the category that best describes your relationship to [NAME FROM LIST OF SEX /CLOSE SOCIAL**

NETWORK]. If you could describe your relationship to [NAME] with more than one of these, tell me all that apply on Card H.

ROMANTIC OR SEX PARTNER
- ❑ 1- Spouse
- ❑ 2- Romantic partner, but no sex
- ❑ 3- Romantic sex partner
- ❑ 4- Non-romantic sex partner
- ❑ 5- Sex customer
- ❑ 6- Sex worker
- ❑ 7- OTHER ROMANTIC OR SEX PARTNER [SPECIFY] _____

FRIEND
- ❑ 8- Close Friend
- ❑ 9- Friend
- ❑ 10- Acquaintance
- ❑ 11- OTHER FRIEND [SPECIFY] _____

NEIGHBOR OR HOUSEMATE
- ❑ 12- Neighbor
- ❑ 13- Roommate / housemate
- ❑ 14- OTHER NEIGHBOR OR HOUSEMATE [SPECIFY] _____

CO-WORKER
- ❑ 15- Co-worker
- ❑ 16- Boss
- ❑ 17- Subordinate
- ❑ 18- OTHER CO-WORKER [SPECIFY] _____

FAMILY - relatives by blood or marriage
- ❑ 19 - Parent [Mother/Father/Step-parent
- ❑ 20- Child
- ❑ 21- Sibling [Brother/sister/step-brother/sister]
- ❑ 22- Brother-in-law or Sister-in-law
- ❑ 23- OTHER RELATIVE [SPECIFY] _____

FAMILY – play or made-up
- ❑ 24- Play Parent
- ❑ 25- Play Child
- ❑ 26- Play Sibling [Play brother or Play Sister]
- ❑ 27- House parent
- ❑ 28- Other play relative [SPECIFY] _____

OTHER
- ❑ 29- Minister
- ❑ 30- Teacher
- ❑ 31- Doctor
- ❑ 32 OTHER, SPECIFY _____
- ❑ REFUSED

PAGE BREAK

→Question 93 is skipped for sexual partners, who will provide this information later in the survey (at question 133) them.

93. Is [Name of social contact] male, female or transgender?

❍ Male
❍ Female
❍ Transgender
❍ DK
❍ REF

PAGE BREAK

→If transgender, 94 shows. If not, skips to Q281

94 Is that male-to-female or female-to-male?

❍ Male-to-female
❍ Female-to-male
❍ DK
❍ REF

Q281. Is [NAME] under 19 years of age?

❍ Yes
❍ No
❍ DK
❍ REF

→ If Q281 is yes (NAME is younger than 19), skips to question 96.

95. How old is [NAME] ?

<DROP-DOWNS SHOW: 19, 20, 21, …, 76+, DK, REF>

96. Is [NAME] a full time student, part time student or not a student?

❍ FT student
❍ PT student
❍ Not a student
❍ DK
❍ REF

97. What is the highest level of education that [NAME] completed?

- ❍ Grade 0-12, Specify _____
- ❍ High School Degree or GED
- ❍ Some college (no degree)
- ❍ Associate's degree or technical/vocational license (2-yr college degree, AA or AS)
- ❍ Bachelor's degree (4-yr college degree, BA or BS)
- ❍ Master's degree
- ❍ Doctoral or graduate professional degree (MD, Law)
- ❍ DK
- ❍ REF

98. Is [NAME] employed full time, part time, or not employed?

- ❍ Employed full time (30 hours or more a week)
- ❍ Employed part time (less than 30 hours a week)
- ❍ Not employed
- ❍ Retired
- ❍ IF VOLUNTEERED: on disability or workmen's comp
- ❍ DK
- ❍ REF

99. Is [NAME] Hispanic?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

100. What is [NAME]'s race or ethnicity?

- ❑ Black/African American
- ❑ White/Caucasian
- ❑ American Indian or Alaskan Native
- ❑ Asian or Pacific Islander
- ❑ Other (PLEASE SPECIFY) _____
- ❑ DK
- ❑ REF

PAGE BREAK

101. Where does [NAME] live?

Street runs one way (e.g. East and West) ☐

Street runs the other way (e.g. North and South) ☐

State ☐

PAGE BREAK

→If [NAME] is family member, skips to question 113

102. When did you first meet [NAME]?

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

103. How did you meet [NAME]? Was that through somebody else you both knew, through a phone or internet program or site, or some other way?

- ❍ Through somebody else you both knew
- ❍ Phone or internet
- ❍ Some other way
- ❍ DK
- ❍ REF

→If answer question 103 "though somebody else" goes to question 104.
→If answer "phone or internet," skips to question 105
→If answer "some other way" skips to question 107

PAGE BREAK

104. Is the person you met [NAME] through a person you already told us about? Who was it?

- ❍ No - How is the person you met through related to you? _____
- ❍ Yes, Network Member - please specify which one. _____
- ❍ DK
- ❍ REF

105. Was that a mobile app, something on the internet or a telephone service?

- ❍ Mobile app
- ❍ Internet site
- ❍ Telephone service - what service? _____
- ❍ DK
- ❍ REF

→If selects Mobile app or Internet site in 105, question 106 shows

106. What is it called?

- ❍ Other, specify if not on list below _____
- ❍ Adam4Adam, Adam4Adam Radar
- ❍ BGC, Black Gay Chat
- ❍ Craigslist
- ❍ Facebook
- ❍ Grindr
- ❍ Growlr
- ❍ Hornet
- ❍ Instagram
- ❍ JackD
- ❍ OKcupid
- ❍ Scruff
- ❍ Twitter
- ❍ Tinder
- ❍ Thugs4Sex

→Only if R met [NAME] in "Some other way," will see question 107 after question 103.
107. How did you meet [NAME]?

→All respondents will see question 108 after answering question 104, 105, 106, or 107.
108. Where did you meet [NAME] for the first time?

109. What kind of place was that?

- ❍ Bar/night club/dance club
- ❍ Health, social service, or volunteer event
- ❍ Health club or gym
- ❍ Respondent or Alter home
- ❍ Party in a private home (house party)
- ❍ Outdoors/cruising/Parks/public/bathrooms
- ❍ Work
- ❍ School
- ❍ Church or House of Worship/Church or religious activity
- ❍ Jail or Prison
- ❍ AA or NA meeting
- ❍ Other (SPECIFY) _____
- ❍ DK
- ❍ REF

→If answers 109 as "Bar/night club/dance club" 110 will show for those in Chicago, and 110H will show for those in Houston.

110C. SELECT VENUE OR OTHER IF NOT LISTED

- ❒ Other, specify _____
- ❒ Scarlet
- ❒ Minibar
- ❒ Roscoe"s Tavern
- ❒ Sidetrack Video Bar
- ❒ Circuit
- ❒ Jeffrey Pub
- ❒ School of Opulence
- ❒ Beauty Bar
- ❒ Hydrate
- ❒ Berlin
- ❒ Big Chicks
- ❒ D.S. Tequila Company
- ❒ Steamworks
- ❒ K Dock Media
- ❒ Club Escape
- ❒ Jackson Park
- ❒ Elixir Lounge
- ❒ Mary's Attic
- ❒ Taste Night Club
- ❒ Rehab Lounge and Cabaret
- ❒ High Society Entertainment Group
- ❒ Harold Washington Library
- ❒ Crew Bar and Grill
- ❒ East of the Ryan
- ❒ Jackhammer
- ❒ The Circle at Garfield Park
- ❒ Closet
- ❒ Replay Beer and Bourbon
- ❒ North End
- ❒ Macy's on State Street
- ❒ Washington Park (along Cottage Grove)
- ❒ Wangs / Men's Room / Bijou Theatre
- ❒ Sofo
- ❒ Rainbow Beach
- ❒ Bobby Loves
- ❒ Lucky Horseshoe Lounge
- ❒ Manhandler Saloon
- ❒ La Cueva
- ❒ Dragon Lady Lounge
- ❒ Progress Bar

110H. SELECT VENUE OR OTHER IF NOT LISTED
→ Shows only for Houston

- ❒ Bayou City Bar & Grill
- ❒ Berryhill Baja Grill and Cantina
- ❒ Boheme Café and Wine Bar
- ❒ Brasil Café
- ❒ Crocker Bar
- ❒ EJ's Bar
- ❒ Guava Lamp Video Lounge
- ❒ Hollywood Vietnamese Café
- ❒ JR's Bar & Grill
- ❒ Meteor
- ❒ Numbers
- ❒ The Eagle
- ❒ Ripcord Leather Bar
- ❒ Thirteen: The Heights Bar (previously In-n-Out)
- ❒ Tony's Corner Pocket
- ❒ Black Hole Coffee House
- ❒ Inversion Coffee House
- ❒ McDonald's on Westheimer
- ❒ Starbucks on Montrose
- ❒ Blur
- ❒ Club 2020
- ❒ Crystal Nightclub
- ❒ F Bar
- ❒ South Beach
- ❒ Bunnies on the Bayou
- ❒ Houston Splash
- ❒ LUEY Weekend / The Houston Council of Clubs (HCC), Inc.
- ❒ Wonderland Houston
- ❒ Executive Adult Video Superstore
- ❒ Hollywood Super Center
- ❒ Whole Foods Market - Montrose
- ❒ Megaflix (previously Adult Megaplexxx)
- ❒ Club Houston
- ❒ Midtowne Spa
- ❒ 611 Hyde Park Pub
- ❒ After Hours / KPFT
- ❒ XL / Trade Thursday

→If answer 109 as "Health, social service or volunteer event" 111 will show for Chicag, and 111H will show for Houston.

111C. SELECT VENUE OR OTHER IF NOT LISTED

- ❒ Other, specify _____
- ❒ Night Ministry / THE CRIB
- ❒ Center on Halsted
- ❒ Howard Brown Health Center
- ❒ Test Positive Aware Network
- ❒ Broadway Youth Center (HBHC)
- ❒ Brothers Health-Collective
- ❒ CALOR
- ❒ Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)
- ❒ NU Pride at Northeastern University
- ❒ LGBT Club at Truman College
- ❒ Taskforce (at the corner of Cicero and Madison)
- ❒ Advocate at Loyola University
- ❒ Common Ground Columbia College
- ❒ Café Pride at Lakeview Presbeytrian Church
- ❒ LGBT Office at the University of Chicago
- ❒ Northwestern University LGBT Resource Center
- ❒ UIC Gender and Sexuality Center
- ❒ Chicago Metropolitan Sports Association or CMSA
- ❒ LGBT Office DePaul
- ❒ Xsport Gym on South State Street
- ❒ LA Fitness on 47th Street
- ❒ FFC on Halsted Street
- ❒ LVAC - Lakeview Athletic Club
- ❒ Access Community Health Network: Grand Blvd.
- ❒ Chicago Black Gay Men's Caucus
- ❒ COIP at UIC
- ❒ FUEL at The University of Chicago
- ❒ Vida/SIDA
- ❒ Cook County Jail (Cook County Dept. of Corrections)
- ❒ Cook County Juvenile Division
- ❒ Chicago House
- ❒ Illinois Caucus for Adolescent Health
- ❒ Project VIDA
- ❒ Prologue
- ❒ The Core Center
- ❒ AIDS Foundation of Chicago
- ❒ South Side Help Center

111H. SELECT VENUE OR OTHER IF NOT LISTED

→ **Shows only for Houston.**

- ❒ AIDS Foundation Houston, Inc.
- ❒ Delta Phi Upsilon Fraternity, Iota Chapter
- ❒ GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter
- ❒ Houston Area Community Services (HACS)
- ❒ Legacy Community Health Services - Lyons clinic
- ❒ Legacy Community Health Services - Montrose clinic
- ❒ Legacy Community Health Services - mSociety
- ❒ LIVE Consortium
- ❒ Montrose Center (including HATCH Youth)
- ❒ Out & Equal Houston
- ❒ PRIDE Houston, Inc.
- ❒ St. Hope Foundation - Bellaire/Houston Health Care Center
- ❒ Thomas Street Health Center
- ❒ University of Houston LGBT Resource Center
- ❒ 24 Hour Midtown
- ❒ Fit Athletic Club
- ❒ Freed-Montrose Neighborhood Library
- ❒ University of Houston GLOBAL
- ❒ Houston Gaymers
- ❒ Lambda NextGen Houston
- ❒ Lone Star College-CyFair GLBTA
- ❒ National Leather Association - Houston
- ❒ Grace Lutheran Church
- ❒ Open Gate Ministries (Bering United Methodist Church)
- ❒ Progressive Open Door Christian Center (including Fresh Start Community Haven)
- ❒ Resurrection Metropolitan Community Church
- ❒ Unity Church of Christianity
- ❒ Houston Hurricanes (Football)
- ❒ Houston Tennis Club
- ❒ Lone Star Volleyball Association
- ❒ Montrose Softball League
- ❒ St. Hope Foundation - B.R.O. IV Life Prevention Services
- ❒ Montrose Grace Place
- ❒ Covenant House (including clinic)
- ❒ Harris County Juvenile Detention Center
- ❒ Harris County Jail

→Skips to question 113 if [NAME] is a family member, or if R met [NAME] through somebody else they both knew (as indicated in question 103).

112. Who first initiated your relationship, you or [NAME]?

❍ RESPONDENT
❍ ALTER
❍ BOTH
❍ Other (IF VOLUNTEERED, SPECIFY): _____
❍ DK
❍ REF

113. Is [NAME] on your Facebook friends list?

❍ YES
❍ NO
❍ DK
❍ REF
❍ RESPONDENT NOT ON FACEBOOK

114. Is [NAME] on any other online networking site?

❍ Yes, what is it called? IF MULTIPLE SITES, SEPARATE WITH A COMMA
_____
❍ No
❍ DK
❍ REF

115. Please look at Card J and tell me how often you communicate with [NAME] in person or by email, texting or phone.

❍ 1 - Every day
❍ 2 - Several times a week
❍ 3 - Once a week
❍ 4 - Once every two weeks
❍ 5 - Once a month
❍ 6 - A couple of times a year
❍ 7 - Once a year
❍ 8 - Less than once a year
❍ 9 - Never
❍ DK
❍ REF

SECTION BREAK – Communication between network members

ALTALT1. **[CARD J] In the next set of questions, I'm going to give you two of the names you listed earlier, and ask you to indicate how frequently these two people talk to each**

other by using the categories on this card. Once we get started, I think you'll see that this works pretty easily.

How often does [NAME 1] interact with....

Name 2	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 3		2 - Several times a week
Name 4		3 - Once a week
Name 5		4 - Once every two weeks
Name 6		5 - Once a month
Name 7		6 - A couple of times a year
Name 8		7 - Once a year
Name 9		8 - Less than once a year
Name 10		9 - Never
		DK
		REF

ALTALT2. **Using Card J, how often does [Name 2] interact with....**

Name 3	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 4		2 - Several times a week
Name 5		3 - Once a week
Name 6		4 - Once every two weeks
Name 7		5 - Once a month
Name 8		6 - A couple of times a year
Name 9		7 - Once a year
Name 10		8 - Less than once a year
		9 - Never
		DK
		REF

ALTALT3. **Using Card J, how often does [NAME3] interact with....**

Name 4	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 5		2 - Several times a week
Name 6		3 - Once a week
Name 7		4 - Once every two weeks
Name 8		5 - Once a month
Name 9		6 - A couple of times a year
Name 10		7 - Once a year
		8 - Less than once a year
		9 - Never
		DK
		REF

ALTALT4. **Using Card J, how often does [NAME4] interact with....**

Name 5	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 6		2 - Several times a week
Name 7		3 - Once a week
Name 8		4 - Once every two weeks
Name 9		5 - Once a month
Name 10		6 - A couple of times a year
		7 - Once a year
		8 - Less than once a year
		9 - Never
		DK
		REF

ALTALT5. **Using Card J, how often does [NAME 5] interact with....**

Name 6	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 7		2 - Several times a week
Name 8		3 - Once a week
Name 9		4 - Once every two weeks
Name 10		5 - Once a month
		6 - A couple of times a year
		7 - Once a year
		8 - Less than once a year
		9 - Never
		DK
		REF

ALTALT6. **Using Card J, how often does [NAME 6] interact with....**

Name 7	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 8		2 - Several times a week
Name 9		3 - Once a week
Name 10		4 - Once every two weeks
		5 - Once a month
		6 - A couple of times a year
		7 - Once a year
		8 - Less than once a year
		9 - Never
		DK
		REF

ALTALT7. **Using Card J, how often does [NAME 7] interact with....**

Name 8	<DROP-DOWNS **BY EACH NAME** SHOW:	1 - Every day >
Name 9		2 - Several times a week
Name 10		3 - Once a week
		4 - Once every two weeks
		5 - Once a month

6 - A couple of times a year
7 - Once a year
8 - Less than once a year
9 - Never
DK
REF

***ALTALT8*. Using Card J, how often does [NAME 8] interact with....**
Name 9 <DROP-DOWNS **BY EACH NAME** SHOW: 1 - Every day >
Name 10
2 - Several times a week
3 - Once a week
4 - Once every two weeks
5 - Once a month
6 - A couple of times a year
7 - Once a year
8 - Less than once a year
9 - Never
DK
REF

***ALTALT9*. Using Card J, how often does [NAME 9] interact with....**
Name 10 <DROP-DOWNS **BY EACH NAME** SHOW: 1 - Every day >
2 - Several times a week
3 - Once a week
4 - Once every two weeks
5 - Once a month
6 - A couple of times a year
7 - Once a year
8 - Less than once a year
9 - Never
DK
REF

SECTION BREAK – Detailed Information, Sex and Social Contacts

→ This group of questions 116-131 will be looped and asked about each sex partner and social contact.

116. Now let's focus on [NAME]. These questions are more personal and I want to remind you that everything is confidential. If a question does not apply or you would rather not answer just let me know.

117. Is [NAME] married, in a committed relationship with one person, in a casual relationship with one person, single, or something else?

- ❍ Married,
- ❍ In a committed relationship with one other person,
- ❍ In a casual relationship,
- ❍ Single
- ❍ IF VOLUNTEERED: In a committed relationship with Respondent
- ❍ Or something else? SPECIFY: _____
- ❍ DK
- ❍ REF

118. Does [NAME] have sex with men, transgender women, women, or a combination?

- ❑ Men
- ❑ Transgender women (IF NECESSARY: that is women who were born as male/has a penis)
- ❑ Women (IF NECESSARY: that is women who were born and live as female)
- ❑ Other (IF VOLUNTEERED, SPECIFY): _____
- ❑ DK
- ❑ REF

→Group sex questions 119 and 120 will be skipped if respondent previously reports never having had group sex.

119. Group sex. [READ ONLY FOR THE FIRST PERSON IN THIS LOOP]: Sometimes people have sex in a room or at a party where two or more other people are also having sex. We will call this group sex.

[READ FOR ALL]: Have you ever had sex with [NAME] while group sex was taking place?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

120. Does [NAME] know that you have sex with men?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

→ Question 121 will be skipped if [NAME] is a family member.

121. Using Card J, how often do you think [NAME] has "unprotected sex", that is, vaginal or anal sex without a condom?

- ❍ 1 - Every day
- ❍ 2 - Several times a week
- ❍ 3 - Once a week
- ❍ 4 - Once every two weeks
- ❍ 5 - Once a month
- ❍ 6 - A couple of times a year
- ❍ 7 - Once a year
- ❍ 8 - Less than once a year
- ❍ 9 - Never
- ❍ DK
- ❍ REF

PAGE BREAK

122. Using Card J, how often does [NAME] smoke cigarettes or cigars?

❍ 1 - Every day
❍ 2 - Several times a week
❍ 3 - Once a week
❍ 4 - Once every 2 weeks
❍ 5 - Once a month
❍ 6 - A couple times a year
❍ 7 - Once a year
❍ 8 - Less than once a year
❍ 9 - Never
❍ DK
❍ REF

123. Using Card J, how often does [NAME] drink alcohol, including beer or wine?

❍ 1 - Every day
❍ 2 - Several times a week
❍ 3 - Once a week
❍ 4 - Once every 2 weeks
❍ 5 - Once a month
❍ 6 - A couple times a year
❍ 7 - Once a year
❍ 8 - Less than once a year
❍ 9 - Never
❍ DK
❍ REF

124. Using Card J, how often does [NAME] use drugs, including marijuana?

❍ 1 - Every day
❍ 2 - Several times a week
❍ 3 - Once a week
❍ 4 - Once every 2 weeks
❍ 5 - Once a month
❍ 6 - A couple times a year
❍ 7 - Once a year
❍ 8 - Less than once a year
❍ 9 - Never
❍ DK
❍ REF

→ Skips question 125 if R answers 124 with "Never" or "DK"

125. Using Card C, which of these has [NAME] used in the last 6 months?

❑ Tobacco products: cigarettes, chewing tobacco, cigars, etc.
❑ Alcoholic beverages: beer, wine, spirits, etc.
❑ Cannabis: marijuana, pot, grass, hash, etc.
❑ Cocaine: coke, crack, etc.
❑ Methamphetamine: Crystal, "tina", meth, speed

- ❑ Ecstasy, E or Molly
- ❑ Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc.
- ❑ Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc.
- ❑ Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc.
- ❑ Opioids: heroin, morphine, methadone, codeine, etc.
- ❑ Prescription Pain Killers: oxycodone, Vicodin, T3, etc.
- ❑ Steroids
- ❑ Other – specify: _____

126. In the last 6 months, have you ever used or shared drugs with [NAME]?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

127. [CARD C] Which of these have you used or shared with [NAME] in the last 6 months?

- ❑ Tobacco products: cigarettes, chewing tobacco, cigars, etc.
- ❑ Alcoholic beverages: beer, wine, spirits, etc.
- ❑ Cannabis: marijuana, pot, grass, hash, etc.
- ❑ Cocaine: coke, crack, etc.
- ❑ Methamphetamine: Crystal, “tina”, meth, speed
- ❑ Ecstasy, E or Molly
- ❑ Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc.
- ❑ Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc.
- ❑ Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc.
- ❑ Opioids: heroin, morphine, methadone, codeine, etc.
- ❑ Prescription Pain Killers: oxycodone, Vicodin, T3, etc.
- ❑ Steroids
- ❑ Other – specify: _____

128. Have you shared a needle or cotton with [NAME] in the last 6 months?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

129. [CARD J] Sometimes people use drugs or alcohol to make sex easier, last longer, or feel better. Using Card J, how often do you think [NAME] uses drugs or alcohol for sex?

- ❍ 1 - Every day
- ❍ 2 - Several times a week
- ❍ 3 - Once a week
- ❍ 4 - Once every two weeks
- ❍ 5 - Once a month
- ❍ 6 - A couple of times a year
- ❍ 7 - Once a year
- ❍ 8 - Less than once a year
- ❍ 9 - Never
- ❍ DK
- ❍ REF

130. Has [NAME] ever been detained, arrested, or spent time in jail or prison?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

131. In the last 6 months, how many times has [NAME] betrayed your trust?

- ❍ Never
- ❍ Once
- ❍ Twice
- ❍ Three or more times
- ❍ DK
- ❍ REF

SECTION BREAK – Relationship of Respondent to Alter

132. *Relationship* Okay, now just focusing on [NAME OF SEX OR SOCIAL CONTACT].

→If social contact, skips to question 135 (social contacts' genders were previously requested in question 93).

133. Gender Is [NAME] male, female or transgender?

❍ Male
❍ Female
❍ Transgender
❍ DK
❍ REF

→If transgender:

134. Male-to-female or female-to-male?

❍ Male-to-female
❍ Female-to-male
❍ REF

135. Is [NAME] a main partner or a casual partner? [By "main partner" I mean a person you have sex with and who you feel committed to above anyone else. This is a partner you would call your boyfriend/girlfriend, significant other, spouse or life partner. By "casual partner" I mean someone you have sex with but do not feel committed to or don't know very well.]

❍ Main Partner
❍ Casual Partner
❍ DK
❍ REF

136.SexN. Look at Card K and tell me about how many times total have you had sex with [NAME]?

❍ 1 time
❍ 2 times
❍ 3 times
❍ 4 times
❍ 5 times
❍ 6 times
❍ 7 times
❍ 8 times
❍ 9 times
❍ 10 - 20 times
❍ More than 20 times
❍ DK
❍ REF

137. Is/Was [NAME] HIV-positive or negative?

❍ Positive
❍ Negative
❍ DK
❍ REF

138. Do you currently live with [NAME]?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

1**39. When did you start living with [NAME]?**

Year <DROPDOWN SHOWS: 2005, 2004, 2003,…..,1985, REF, DK>
Month <DROPDOWN SHOWS: January, February, March…December, DK, REF>

140. Did you have sex with [NAME] for the first time within 12 hours of your first meeting?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

PAGE BREAK

Phys att. **Physical attractiveness**

141. How attractive is [NAME] compared to others…

	Much less attractive	Somewhat less attractive	Somewhat more attractive	Much more attractive	REF
His/her age?	❍	❍	❍	❍	❍
in your circle of friends?	❍	❍	❍	❍	❍

142. Now compared to you, would you say that [NAME] is more or less attractive than you?

❍ More
❍ Less
❍ DK
❍ REF

PAGE BREAK

alter gay. **ALTER GAY SUBCULTURE AFFILIATION**

143AltGrp**. Next, please tell me which groups or crowds [NAME] is part of. Is [NAME] a ...**

	Yes	No	Never heard of	REF
Bear, otter, or cub	❍	❍	❍	❍
Twink or chicken	❍	❍	❍	❍
Jocks	❍	❍	❍	❍
Daddies	❍	❍	❍	❍
Circuit/party boys	❍	❍	❍	❍
Gaymers/Geeks	❍	❍	❍	❍
Drag queens	❍	❍	❍	❍
Leather / kink (also:into bondage, BDSM)	❍	❍	❍	❍
Queer	❍	❍	❍	❍

144. Any other groups or crowds that [NAME] is or has been part of?

PAGE BREAK

***OSEXINTRO*. Oral sex**

Now I'd like you think about the times you had sex with [NAME] during the past 6 months, or since April 29, 2014. If you were not sexually involved the whole time, please think only about the period of time when you were involved. First, I will ask you some questions about oral sex.

→If R has had sex with [NAME] more than 1 time in the past 6 months (as reported in question 136), will get question 145. If only had sex once, will skip to question 146.

145. Using Card F, when you had sex with ${lm://Field/1}, how often did you engage in oral sex? Was it…

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

146. When you had sex with [NAME] did you engage in oral sex?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

PAGE BREAK

→If [NAME] is male, skips questions 147 to 150

***VSEXINTRO*. Vaginal sex. Now I will ask you some questions about vaginal intercourse.**

147. Using Card F, when you had sex with [NAME], how often did you have vaginal intercourse? Was it…

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

148. When you had sex with [NAME], did you have vaginal intercourse?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

149. Using Card F, when you had vaginal intercourse with [NAME], how often did you use condoms?

- ❍ 1 - Always
- ❍ 2 - Usually
- ❍ 3 - Sometimes
- ❍ 4 - Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

150. When you had vaginal intercourse with [NAME] did you use condoms?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

PAGE BREAK

***ASEXINTRO.* Anal sex**

Now I'm going to ask you some questions about anal sex.

→If R has had sex with [NAME] more than 1 time in the past 6 months (as reported in question 136), will get question 151. If only had sex once, will skip to question 146.

151. Using Card F, when you had sex with [NAME] how often did you have anal sex? Was it…

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

152. When you had sex with [NAME], did you have anal sex?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

→ If [NAME] is not male, or if R never had anal sex with [NAME] skips questions 153-155.

153. When you had anal sex with ${lm://Field/1} were you…

- ❍ Always top
- ❍ Usually top
- ❍ Equally top and bottom
- ❍ Usually bottom
- ❍ Always bottom
- ❍ DK
- ❍ REF

PAGE BREAK

154. When you had anal sex, were you top, bottom, or both?

- ❍ Top
- ❍ Bottom
- ❍ Both
- ❍ DK
- ❍ REF

155. When you had anal sex, who took the lead in deciding who would be top and bottom?

- ❍ RESPONDENT
- ❍ PARTNER
- ❍ BOTH
- ❍ DK
- ❍ REF

PAGE BREAK

→Skips 156 and 157 if R never had anal sex with [NAME].
→If R only had sex once with [NAME] skips this question and shows 157 instead.

156. Using Card F, when you had anal sex with [NAME], how often did you use condoms?

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

157. When you had anal sex with [NAME], did you use condoms?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

PAGE BREAK

→This set of questions is displayed only for the names of those who R reports to have had sex with in the last 6 months. If R had sex >1 time, questions 158 and 159 will show. If only 1 time, question 160 will show.

158. [READ ONLY FOR THE FIRST PERSON IN THIS LOOP]: Sometimes people have sex in a room or at a party where two or more other people are also having sex. We will call this group sex.

[READ FOR ALL]: Did you have group sex with [NAME] in the last 6 months?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

159. Using Card F, when you had sex with [NAME] how often was this during group sex?

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

160. [READ ONLY FOR THE FIRST PERSON IN THIS LOOP]: Sometimes people have sex in a room or at a party where two or more other people are also having sex. We will call this group sex.

[READ FOR ALL]: When you had sex with [NAME], was it during group sex?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

PAGE BREAK

→If R had sex with [NAME] only 1 time, skips 161 and replaces with 162.

161. Using Card F, how often did you and [NAME] use drugs or alcohol when you had sex to enhance the sexual experience?

- ❍ 1 – Always
- ❍ 2 – Usually
- ❍ 3 – Sometimes
- ❍ 4 – Rarely
- ❍ 5 - Never
- ❍ DK
- ❍ REF

162. When you had sex, did you and [NAME] use drugs or alcohol to enhance the sexual experience?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

→ Skips 163 if R Never used drugs or alcohol to enhance sex with [NAME]

163 Using Card C, which of the following did you and [NAME] use when you had sex?

- ❑ Tobacco products: cigarettes, chewing tobacco, cigars, etc.
- ❑ Alcoholic beverages: beer, wine, spirits, etc.
- ❑ Cannabis: marijuana, pot, grass, hash, etc.
- ❑ Cocaine: coke, crack, etc.
- ❑ Methamphetamine: Crystal, “tina”, meth, speed
- ❑ Ecstasy, E or Molly

- ❑ Inhalants: poppers, nitrous, glue, petrol, paint thinner, etc.
- ❑ Sedatives or Sleeping Pills: Valium, Serepax, Rohypnol, etc.
- ❑ Hallucinogens: LSD, acid, mushrooms, PCP, Special K, etc.
- ❑ Opioids: heroin, morphine, methadone, codeine, etc.
- ❑ Prescription Pain Killers: oxycodone, Vicodin, T3, etc.
- ❑ Steroids
- ❑ Other – specify: _____
- ❑ DK
- ❑ REF

PAGE BREAK

164. In the past 6 months, did you give [NAME] drugs, money, shelter, or other goods in exchange for sex?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

→If yes to 164:

165. What did you give [NAME] in exchange for sex?

- ❑ Drugs
- ❑ Money
- ❑ Shelter
- ❑ Other (Specify) _____
- ❑ DK
- ❑ REF

166. In the past 6 months, did you receive drugs, money, shelter, or other goods from [NAME] in exchange for sex?

- ❍ Yes
- ❍ No
- ❍ DK
- ❍ REF

→ Skips 167 if R never received drugs or goods in exchange for sex.

167. What did [NAME] give you in exchange for sex?

- ❑ Drugs
- ❑ Money
- ❑ Shelter
- ❑ Other (Specify) _____
- ❑ DK
- ❑ REF

SECTION BREAK – Sex between Sexual Partners

→This section will show for those who have had sex with more than one person in the past 6 months.

***ALTALTSEX*. SEX BETWEEN SEX ALTERS NETWORK**

In this section, we are going to ask whether the people in your sexual network have had sex with each other. You may not know for certain whether your sexual partners have had sex with each other, but if you think that they probably have, say yes, and if you think they probably have not, say no.

***AASEX1*. Do you think [NAME 1 IN SEX NETWORK] has had sex with...**

Name 2	<DROP-DOWNS **BY EACH NAME** SHOW:	YES	>
Name 3		NO	
Name 4		DK	
Name 5		REF	

***AASEX2*. Do you think [NAME 2 IN SEX NETWORK] has had sex with...**

Name 3	<DROP-DOWNS **BY EACH NAME** SHOW:	YES	>
Name 4		NO	
Name 5		DK	
		REF	

***AASEX3*. Do you think [NAME 3 IN SEX NETWORK] has had sex with...**

Name 4	<DROP-DOWNS **BY EACH NAME** SHOW:	YES	>
Name 5		NO	
		DK	
		REF	

***AASEX4*. Do you think [NAME 4 IN SEX NETWORK] has had sex with...**

Name 5	<DROP-DOWNS **BY EACH NAME** SHOW:	YES	>
		NO	
		DK	
		REF	

SECTION BREAK – Additional Information

***LASTINTRO*. Finally, some more questions about you and your background. ON NEXT QUESTION, GIVE THE RESPONDENT THE IPAD TO ANSWER**

PAGE BREAK

***168Clothes*. Which of the following clothing brands do you like the most? You may pick as many as you want.**

- ❑ Abercrombie
- ❑ Academiks
- ❑ Adidas
- ❑ Air Force One
- ❑ Air Jordans
- ❑ Alexander Wang
- ❑ American Apparel
- ❑ American Eagle
- ❑ Armani
- ❑ Armani Exchange
- ❑ ASOS
- ❑ Banana Boat
- ❑ Banana Republic
- ❑ Big & Tall
- ❑ Brooks Brothers
- ❑ Burberry
- ❑ Calvin Klein
- ❑ Carhartt
- ❑ Casio
- ❑ Chico’s
- ❑ Chuck Taylor's
- ❑ Columbia
- ❑ Dolce & Gabana
- ❑ DTLR
- ❑ Forever 21
- ❑ Fossil
- ❑ Gap
- ❑ Gucci
- ❑ Guess
- ❑ H&M
- ❑ Hollister
- ❑ J Crew
- ❑ Jos A Bank
- ❑ JZ
- ❑ K-Swiss
- ❑ L L Bean
- ❑ Lacoste
- ❑ Levi’s
- ❑ Louis Vuitton
- ❑ Marc Jacobs
- ❑ Men’s Warehouse
- ❑ Michael Kors
- ❑ New Balance
- ❑ New Era
- ❑ Nike
- ❑ Nordstrom

- ❑ North Face
- ❑ Old Navy
- ❑ Pac Sun
- ❑ Pelli Pelli
- ❑ Polo
- ❑ Puma
- ❑ Ralph Lauren
- ❑ Ray-Ban
- ❑ Religion
- ❑ Rocawear
- ❑ Saint Laurent
- ❑ Sperry
- ❑ Target
- ❑ Timberland
- ❑ Tommy Hilfiger
- ❑ True Religion
- ❑ Trukfit
- ❑ Underarmor
- ❑ Urban Outfitters
- ❑ Vans
- ❑ Versace
- ❑ Walmart
- ❑ Wrangler
- ❑ You don't really pay attention to brands when buying clothes

PAGE BREAK

BackToInt. **PLEASE RETURN THE IPAD TO THE INTERVIEWER**

SECTION BREAK

169. What is your current relationship status? Are you…

- ❍ In a relationship with a man
- ❍ In a relationship with a woman
- ❍ In a relationship with a transgender woman
- ❍ Not in a relationship
- ❍ OTHER (SPECIFY) _____
- ❍ DK
- ❍ REF

170. Using Card L, what is your current legal marital status?

- ❍ Legally married
- ❍ Registered domestic partnership or civil union
- ❍ Never married and never in a registered domestic partnership or civil union
- ❍ Separated
- ❍ Divorced
- ❍ Widowed
- ❍ DK
- ❍ REF

171. Are you currently working full time, part time, or not employed?

- ❍ Full time (30 hours or more a week)
- ❍ Part time (less than 30 hours a week)
- ❍ Not employed
- ❍ DK
- ❍ REF

→Displays if "Not employed" is selected

172. Please indicate whether or not you are receiving any of the following types of income? ?

- ❍ Unemployment compensation
- ❍ Disability paymentsDK
- ❍ REF

173. [CARD M] Please look at Card M. About how much money did you personally make in the last 12 months from all sources? You can just give me the letter.

- ❍ A. Under $1000
- ❍ B. $1,000-$2,999
- ❍ C. $3,000-$4,999
- ❍ D. $5,000-$9,999
- ❍ E. $10,000-$14,999
- ❍ F. $15,000-$19,999
- ❍ G. $20,000-$24,999
- ❍ H. $25,000-$49,999
- ❍ I. $50,000 or more
- ❍ DK
- ❍ REF

174. In the past 12 months, have you been homeless at any time? By homeless, I mean you were living on the street, in a shelter, a Single Room Occupancy hotel (SRO), temporarily staying with friends or relatives, or living in a car?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

→Displays if "YES" is selected for homelessness status

175. Are you currently homeless?

- ❍ YES
- ❍ NO
- ❍ DK
- ❍ REF

176. Using Card N, what type of residence do you currently live in?

- ❍ Your own apartment or house (rented or owned)
- ❍ Your parents' apartment or house
- ❍ A lover's apartment or house
- ❍ An ex-lover's apartment or house
- ❍ A relative's apartment or house
- ❍ A friend's (not a lover's) apartment or house
- ❍ Rented room in a hotel
- ❍ Student dormitory
- ❍ A "squat"
- ❍ Shelter, welfare boarding house, or halfway house
- ❍ On the streets, in a vehicle, or train or train station
- ❍ In jail or correctional facility
- ❍ Rented room in a rooming house
- ❍ In an abandoned building
- ❍ Other (SPECIFY) _____
- ❍ DK
- ❍ REF

177. Using Card O, how long have you lived where you live now?

- ❍ Less than a month
- ❍ About 1 month
- ❍ 2-3 months
- ❍ 4-6 months
- ❍ 7-11 months
- ❍ 1 or 2 years
- ❍ 3 or 4 years
- ❍ 5-9 years
- ❍ 10 years or more, but not entire life
- ❍ Entire life
- ❍ DK
- ❍ REF

178. At how many different places have you lived in the past 12 months?

- ❍ Have only lived in one place
- ❍ 2
- ❍ 3
- ❍ 4-5
- ❍ 6 or more
- ❍ DK
- ❍ REF

179. Using Card P, who are all the people you live with?

- ❑ Nobody - you live by yourself
- ❑ Spouse
- ❑ Lover
- ❑ Ex-lover
- ❑ Roommates
- ❑ Biological or Step Parents
- ❑ Other adult blood relatives
- ❑ House parent
- ❑ Play siblings
- ❑ Other adults (not spouse/lover/relatives)
- ❑ Other children (your own or others)
- ❑ DK
- ❑ REF

PAGE BREAK

***HANDTO4*. GIVE IPAD TO RESPONDENT FOR SELF-ADMINISTERED SECTION.**

SECTION BREAK

180. Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way <u>during the past week</u> by selecting the appropriate <u>option for each question.</u>

	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	All of the time (5-7 days)
I was bothered by things that usually don't bother me.	❍	❍	❍	❍
I had trouble keeping my mind on what I was doing	❍	❍	❍	❍
I felt depressed.	❍	❍	❍	❍
I felt that everything I did was an effort.	❍	❍	❍	❍
I felt hopeful about the future.	❍	❍	❍	❍
I felt fearful.	❍	❍	❍	❍
My sleep was restless.	❍	❍	❍	❍
I was happy.	❍	❍	❍	❍
I felt lonely.	❍	❍	❍	❍
I could not "get going."	❍	❍	❍	❍

***HANDBACK4*. Thank you. Please return the iPad to the interviewer.**

SECTION BREAK Bio-Samples

INTERVIEW ADMINISTERS BLOOD SAMPLE, ANAL SWAB AND RAPID TEST.

PAGE BREAK

END. Thank you, this concludes our interview. [Go on to incentive distribution]

EndTime. What time is it now?

Time – Hour <DROP-DOWN DISPLAYS: 1, 2, 3, ….., 12>
Time – Minutes <DROP-DOWN DISPLAYS: 00, 01, 02, ….., 59>
AM/PM <DROP-DOWN DISPLAYS: AM, PM>

SECTION BREAK – Incentive Distribution

181. As a thank you for taking part in this study, we'd like to provide you with a T-Shirt. We have ten colors. Can you give me your first, second and third choice colors from among the colors you see here?

First choice <DROP-DOWN DISPLAYS: White, Black, Green, Pink, Navy Blue, Light Blue, Purple, Brick Red, Grey, Tan>
Second choice <Drop-down menu>
Third choice <Drop-down menu.

182. DATA COLLECTOR NOTES:

APPENDIX A – AFFILIATION DRILLDOWNS, BARS AND CLUBS

CHICAGO	**How often have you gone to [BAR/CLUB] in the past 12 months?** 1 - Every day 2 - Several times a week 3 - Once a week 4 - Once every two weeks 5 - Once a month 6 - A couple of times a year 7 - Once a year DK REF	**When was the first time you went to [BAR/ CLUB]?** Month/Year	**What days of the week do you usually go to [BAR/CLUB]?** M - Monday T - Tuesday W - Wednesday Th - Thursday F - Friday S - Saturday Su - Sunday N - No particular day
Scarlet			
Minibar			
Roscoe"s Tavern			
Sidetrack Video Bar			
Circuit			
Jeffrey Pub			
School of Opulence			
Beauty Bar			
Hydrate			
Berlin			
Big Chicks			
D.S. Tequila Company			
Steamworks			
K Dock Media			
Club Escape			
Jackson Park			
Elixir Lounge			
Mary's Attic			
Taste Night Club			
Rehab Lounge and Cabaret			

High Society Entertainment Group			
Harold Washington Library			
Crew Bar and Grill			
East of the Ryan			
Jackhammer			
The Circle at Garfield Park			
Closet			
Replay Beer and Bourbon			
North End			
Macy’s on State Street			
Washington Park (along Cottage Grove)			
Wangs / Men's Room / Bijou Theatre			
Sofo			
Rainbow Beach			
Bobby Loves			
Lucky Horseshoe Lounge			
Manhandler Saloon			
La Cueva			
Dragon Lady Lounge			
Progress Bar			

HOUSTON	**How often have you gone to [BAR/CLUB] in the past 12 months?** 1 - Every day 2 - Several times a week 3 - Once a week 4 - Once every two weeks 5 - Once a month 6 - A couple of times a year 7 - Once a year DK REF	**When was the first time you went to [BAR/ CLUB]?** Month/Year	**What days of the week do you usually go to [BAR/CLUB]?** M - Monday T - Tuesday W - Wednesday Th - Thursday F - Friday S - Saturday Su - Sunday N - No particular day
Bayou City Bar & Grill			
Boheme Café and Wine Bar			
Brasil Café			
Crocker Bar			
EJ's Bar			
Guava Lamp Video Lounge			
Hollywood Vietnamese Café			
JR's Bar & Grill			
Meteor			
Numbers			
The Eagle			
Ripcord Leather Bar			
Thirteen: The Heights Bar (previously In-n-Out)			
Tony's Corner Pocket			
Black Hole Coffee House			
Inversion Coffee House			
McDonald's on Westheimer			
Starbucks on Montrose			
Blur			
Club 2020			

Crystal Nightclub			
F Bar			
South Beach			
Bunnies on the Bayou			
Houston Splash			
LUEY Weekend / The Houston Council of Clubs (HCC), Inc.			
Wonderland Houston			
Executive Adult Video Superstore			
Hollywood Super Center			
Whole Foods Market - Montrose			
Megaflix (previously Adult Megaplexxx)			
Club Houston			
Midtowne Spa			
611 Hyde Park Pub			
After Hours / KPFT			
XL / Trade Thursday			

APPENDIX B – AFFILIATION DRILLDOWNS, HEALTH AND SUPPORT

CHICAGO	**How often have you gone to [HEALTH/SUPPORT LOCATION] in the past 12 months?** 1 - Every day 2 - Several times a week 3 - Once a week 4 - Once every two weeks 5 - Once a month 6 - A couple of times a year 7 - Once a year DK REF	**When was the first time you went to [HEALTH /SUPPORT LOCATION?** Month/ Year	**What days of the week do you usually go to [HEALTH/SUPPORT LOCATION]?** M - Monday T - Tuesday W - Wednesday Th - Thursday F - Friday S - Saturday Su - Sunday N - No particular day
Night Ministry / THE CRIB			
Center on Halsted			
Howard Brown Health Center			
Test Positive Aware Network			
Broadway Youth Center (HBHC)			
Brothers Health-Collective			
CALOR			
Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)			
NU Pride at Northeastern University			
LGBT Club at Truman College			
Taskforce (at the corner of Cicero and Madison)			
Advocate at Loyola University			
Common Ground Columbia College			
Café Pride at Lakeview Presbeytrian Church			
LGBT Office at the University of Chicago			
Northwestern University LGBT Resource Center			
UIC Gender and Sexuality Center			

Chicago Metropolitan Sports Association or CMSA			
LGBT Office DePaul			
Xsport Gym on South State Street			
LA Fitness on 47th Street			
FFC on Halsted Street			
LVAC - Lakeview Athletic Club			
Access Community Health Network: Grand Blvd.			
Chicago Black Gay Men's Caucus			
COIP at UIC			
FUEL at The University of Chicago			
Vida/SIDA			
Cook County Jail (Cook County Dept. of Corrections)			
Cook County Juvenile Division			
Chicago House			
Illinois Caucus for Adolescent Health			
Project VIDA			
Prologue			
The Core Center			
AIDS Foundation of Chicago			
South Side Help Center			

HOUSTON	**How often have you gone to [HEALTH/SUPPORT LOCATION] in the past 12 months?** 1 - Every day 2 - Several times a week 3 - Once a week 4 - Once every two weeks 5 - Once a month 6 - A couple of times a year 7 - Once a year DK REF	**When was the first time you went to [BAR/ CLUB]?** Month/ Year	**What days of the week do you usually go to [HEALTH/SUPPORT LOCATION]?** M - Monday T - Tuesday W - Wednesday Th - Thursday F - Friday S - Saturday Su - Sunday N - No particular day
AIDS Foundation Houston, Inc.			
Delta Phi Upsilon Fraternity, Iota Chapter			
GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter			
Houston Area Community Services (HACS)			
Legacy Community Health Services - Lyons clinic			
Legacy Community Health Services - Montrose clinic			
Legacy Community Health Services - mSociety			
LIVE Consortium			
Montrose Center (including HATCH Youth)			
Out & Equal Houston			
PRIDE Houston, Inc.			
St. Hope Foundation - Bellaire/Houston Health Care Center			
Thomas Street Health Center			
University of Houston LGBT Resource Center			
24 Hour Midtown			
Fit Athletic Club			
Freed-Montrose Neighborhood Library			

University of Houston GLOBAL			
Houston Gaymers			
Lambda NextGen Houston			
Lone Star College-CyFair GLBTA			
National Leather Association - Houston			
Grace Lutheran Church			
Open Gate Ministries (Bering United Methodist Church)			
Progressive Open Door Christian Center (including Fresh Start Community Haven)			
Resurrection Metropolitan Community Church			
Unity Church of Christianity			
Houston Hurricanes (Football)			
Houston Tennis Club			
Lone Star Volleyball Association			
Montrose Softball League			
St. Hope Foundation - B.R.O. IV Life Prevention Services			
Montrose Grace Place			
Covenant House (including clinic)			
Harris County Juvenile Detention Center			
Harris County Jail			

APPENDIX C—AFFILIATION DRILLDOWNS, WEBSITES AND APPS

	How often have you used [WEBSITE/APP] in the past 12 months? 1 - Every day 2 - Several times a week 3 - Once a week 4 - Once every two weeks 5 - Once a month 6 - A couple of times a year 7 - Once a year DK REF	**When was the first time you used [WEBSITE/APP]?** Month/ Year	**What days of the week do you usually go to [WEBSITE/APP]?** M - Monday T - Tuesday W - Wednesday Th - Thursday F - Friday S - Saturday Su - Sunday N - No particular day
Adam4Adam, Adam4Adam Radar			
BGC, Black Gay Chat			
Craigslist			
Facebook			
Grindr			
Growlr			
Hornet			
Instagram			
JackD			
OKcupid			
Scruff			
Twitter			
Tinder			
Thugs4Sex			

APPENDIX D – LOCATIONS VISITED WITH SEX PARTNERS AND CLOSE SOCIAL RELATIONS

CHICAGO

***89HSS_ALT*. Have you been to _____ with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK]?**

	Yes	No	REF
Scarlet	❍	❍	❍
Minibar	❍	❍	❍
Roscoe"s Tavern	❍	❍	❍
Sidetrack Video Bar	❍	❍	❍
Circuit	❍	❍	❍
Jeffrey Pub	❍	❍	❍
School of Opulence	❍	❍	❍
Beauty Bar	❍	❍	❍
Hydrate	❍	❍	❍
Berlin	❍	❍	❍
Big Chicks	❍	❍	❍
D.S. Tequila Company	❍	❍	❍
Steamworks	❍	❍	❍
K Dock Media	❍	❍	❍
Club Escape	❍	❍	❍
Jackson Park	❍	❍	❍
Elixir Lounge	❍	❍	❍
Mary's Attic	❍	❍	❍
Taste Night Club	❍	❍	❍
Rehab Lounge and Cabaret	❍	❍	❍
High Society Entertainment Group	❍	❍	❍
Harold Washington Library	❍	❍	❍
Crew Bar and Grill	❍	❍	❍
East of the Ryan	❍	❍	❍
Jackhammer	❍	❍	❍
The Circle at Garfield Park	❍	❍	❍
Closet	❍	❍	❍
Replay Beer and Bourbon	❍	❍	❍
North End	❍	❍	❍
Macy’s on State Street	❍	❍	❍
Washington Park (along Cottage Grove)	❍	❍	❍
Wangs / Men's Room / Bijou Theatre	❍	❍	❍
Sofo	❍	❍	❍
Rainbow Beach	❍	❍	❍

Bobby Loves	❍	❍	❍
Lucky Horseshoe Lounge	❍	❍	❍
Manhandler Saloon	❍	❍	❍
La Cueva	❍	❍	❍
Dragon Lady Lounge	❍	❍	❍
Progress Bar	❍	❍	❍

***90HSS_ALT*. Have you been to _____ with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK]?**

	Yes	No	REF
Night Ministry / THE CRIB	❍	❍	❍
Center on Halsted	❍	❍	❍
Howard Brown Health Center	❍	❍	❍
Test Positive Aware Network	❍	❍	❍
Broadway Youth Center (HBHC)	❍	❍	❍
Brothers Health-Collective	❍	❍	❍
CALOR	❍	❍	❍
Illinois Safe School Alliance -- GSA's (high school, gay/straight alliance)	❍	❍	❍
NU Pride at Northeastern University	❍	❍	❍
LGBT Club at Truman College	❍	❍	❍
Taskforce (at the corner of Cicero and Madison)	❍	❍	❍
Advocate at Loyola University	❍	❍	❍
Common Ground Columbia College	❍	❍	❍
Café Pride at Lakeview Presbeytrian Church	❍	❍	❍
LGBT Office at the University of Chicago	❍	❍	❍
Northwestern University LGBT Resource Center	❍	❍	❍
UIC Gender and Sexuality Center	❍	❍	❍
Chicago Metropolitan Sports Association or CMSA	❍	❍	❍
LGBT Office DePaul	❍	❍	❍
Xsport Gym on South State Street	❍	❍	❍
LA Fitness on 47th Street	❍	❍	❍
FFC on Halsted Street	❍	❍	❍
LVAC - Lakeview Athletic Club	❍	❍	❍
Access Community Health Network: Grand Blvd.	❍	❍	❍
Chicago Black Gay Men's Caucus	❍	❍	❍
COIP at UIC	❍	❍	❍
FUEL at The University of Chicago	❍	❍	❍
Vida/SIDA	❍	❍	❍
Cook County Jail (Cook County Dept. of Corrections)	❍	❍	❍
Cook County Juvenile Division	❍	❍	❍
Chicago House	❍	❍	❍
Illinois Caucus for Adolescent Health	❍	❍	❍
Project VIDA	❍	❍	❍
Prologue	❍	❍	❍
The Core Center	❍	❍	❍
AIDS Foundation of Chicago	❍	❍	❍
South Side Help Center	❍	❍	❍

***91SA_ALT*. Have you interacted with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK] on_____ ?**

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

HOUSTON

Q480 Have you been to _____ with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK]?

	Yes	No	REF
Bayou City Bar & Grill	❍	❍	❍
Berryhill Baja Grill and Cantina	❍	❍	❍
Boheme Café and Wine Bar	❍	❍	❍
Brasil Café	❍	❍	❍
Crocker Bar	❍	❍	❍
EJ's Bar	❍	❍	❍
Guava Lamp Video Lounge	❍	❍	❍
Hollywood Vietnamese Café	❍	❍	❍
JR's Bar & Grill	❍	❍	❍
Meteor	❍	❍	❍
Numbers	❍	❍	❍
The Eagle	❍	❍	❍
Ripcord Leather Bar	❍	❍	❍
Thirteen: The Heights Bar (previously In-n-Out)	❍	❍	❍
Tony's Corner Pocket	❍	❍	❍
Black Hole Coffee House	❍	❍	❍
Inversion Coffee House	❍	❍	❍
McDonald's on Westheimer	❍	❍	❍
Starbucks on Montrose	❍	❍	❍
Blur	❍	❍	❍
Club 2020	❍	❍	❍
Crystal Nightclub	❍	❍	❍
F Bar	❍	❍	❍
South Beach	❍	❍	❍
Bunnies on the Bayou	❍	❍	❍
Houston Splash	❍	❍	❍
LUEY Weekend / The Houston Council of Clubs (HCC), Inc.	❍	❍	❍
Wonderland Houston	❍	❍	❍
Executive Adult Video Superstore	❍	❍	❍
Hollywood Super Center	❍	❍	❍
Whole Foods Market - Montrose	❍	❍	❍
Megaflix (previously Adult Megaplexxx)	❍	❍	❍
Club Houston	❍	❍	❍
Midtowne Spa	❍	❍	❍
611 Hyde Park Pub	❍	❍	❍
After Hours / KPFT	❍	❍	❍
XL / Trade Thursday	❍	❍	❍

Q481 Have you been to _____ with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK]?

	Yes	No	REF
AIDS Foundation Houston, Inc.	❍	❍	❍
Delta Phi Upsilon Fraternity, Iota Chapter	❍	❍	❍
GLSEN (Gay, Lesbian, & Straight Education Network), Houston Chapter	❍	❍	❍
Houston Area Community Services (HACS)	❍	❍	❍
Legacy Community Health Services - Lyons clinic	❍	❍	❍
Legacy Community Health Services - Montrose clinic	❍	❍	❍
Legacy Community Health Services - mSociety	❍	❍	❍
LIVE Consortium	❍	❍	❍
Montrose Center (including HATCH Youth)	❍	❍	❍
Out & Equal Houston	❍	❍	❍
PRIDE Houston, Inc.	❍	❍	❍
St. Hope Foundation - Bellaire/Houston Health Care Center	❍	❍	❍
Thomas Street Health Center	❍	❍	❍
University of Houston LGBT Resource Center	❍	❍	❍
24 Hour Midtown	❍	❍	❍
Fit Athletic Club	❍	❍	❍
Freed-Montrose Neighborhood Library	❍	❍	❍
University of Houston GLOBAL	❍	❍	❍
Houston Gaymers	❍	❍	❍
Lambda NextGen Houston	❍	❍	❍
Lone Star College-CyFair GLBTA	❍	❍	❍
National Leather Association - Houston	❍	❍	❍
Grace Lutheran Church	❍	❍	❍
Open Gate Ministries (Bering United Methodist Church)	❍	❍	❍
Progressive Open Door Christian Center (including Fresh Start Community Haven)	❍	❍	❍
Resurrection Metropolitan Community Church	❍	❍	❍
Unity Church of Christianity	❍	❍	❍
Houston Hurricanes (Football)	❍	❍	❍
Houston Tennis Club	❍	❍	❍
Lone Star Volleyball Association	❍	❍	❍
Montrose Softball League	❍	❍	❍
St. Hope Foundation - B.R.O. IV Life Prevention Services	❍	❍	❍
Montrose Grace Place	❍	❍	❍
Covenant House (including clinic)	❍	❍	❍
Harris County Juvenile Detention Center	❍	❍	❍
Harris County Jail	❍	❍	❍

Q482. Have you interacted with [NAME FROM LIST OF SEX /CLOSE SOCIAL NETWORK] on_____ ?

	Yes	No	REF
Adam4Adam, Adam4Adam Radar	❍	❍	❍
BGC, Black Gay Chat	❍	❍	❍
Craigslist	❍	❍	❍
Facebook	❍	❍	❍
Grindr	❍	❍	❍
Growlr	❍	❍	❍
Hornet	❍	❍	❍
Instagram	❍	❍	❍
JackD	❍	❍	❍
OKcupid	❍	❍	❍
Scruff	❍	❍	❍
Twitter	❍	❍	❍
Tinder	❍	❍	❍
Thugs4Sex	❍	❍	❍

Appendix B: Database Search Strategies

Ovid Medline® search strategy

1	Homosexuality, Male/
2	(gay or homosexual*).ti,ab,kw.
3	1 or 2
4	sexually transmitted diseases/ or sexually transmitted diseases, bacterial/ or gonorrhea/ or syphilis/
5	hiv infections/ or acquired immunodeficiency syndrome/
6	(sti or stds or sexually transmitted or gonorrhea or sphilis or hiv or aids).ti,ab,kw.
7	sexual behavior/ or condoms/ or hiv serosorting/ or prostitution/ or safe sex/ or unsafe sex/ or risk reduction behavior/
8	risk taking/
9	(bareback* or condom* or prostitution or safe sex or unsafe sex).ti,ab,kw.
10	4 or 5 or 6 or 7 or 8 or 9
11	3 and 10
12	social environment/ or community networks/ or social support/
13	(social network* or community network* or social support).ti,ab,kw.
14	12 or 13
15	11 and 14
16	evaluation studies/ or evaluation studies as topic/ or program evaluation/ or validation studies as topic/ or ((pre- adj5 post-) or (pretest adj5 posttest) or (program* adj6 evaluat*)).ti,ab. or (effectiveness or intervention).ti,ab.
17	("clinical trial" or "clinical trial, phase i" or "clinical trial, phase ii" or clinical trial, phase iii or clinical trial, phase iv or controlled clinical trial or "multicenter study" or "randomized controlled trial").pt. or double-blind method/ or clinical trials as topic/ or clinical trials, phase i as topic/ or clinical trials, phase ii as topic/ or clinical trials, phase iii as topic/ or clinical trials, phase iv as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/ or early termination of clinical trials as topic/ or multicenter studies as topic/ or ((randomi?ed adj7 trial*) or (controlled adj3 trial*) or (clinical adj2 trial*) or ((single or doubl* or tripl* or treb*) and (blind* or mask*))).ti,ab,kw. or ("4 arm" or "four arm").ti,ab,kw.
18	16 or 17
19	15 and 18
20	limit 19 to english language

PubMed search strategy

1	Homosexuality, Male[mesh:noexp]
2	(gay[tiab] OR homosexual*[tiab])
3	#1 OR #2
4	sexually transmitted diseases[mesh:noexp] OR sexually transmitted diseases, bacterial[mesh:noexp] OR gonORrhea[mesh:noexp] OR syphilis[mesh:noexp]
5	hiv infections[mesh:noexp] OR acquired immunodeficiency syndrome[mesh:noexp]
6	(sti[tiab] OR stds[tiab] OR sexually transmitted[tiab] OR gonorrhea[tiab] OR sphilis[tiab] OR hiv[tiab] OR aids[tiab])
7	sexual behavior[mesh:noexp] OR condoms[mesh:noexp] OR hiv serosorting[mesh:noexp] OR prostitution[mesh:noexp] OR safe sex[mesh:noexp] OR unsafe sex[mesh:noexp] OR risk reduction behavior[mesh:noexp]
8	risk taking[mesh:noexp]
9	(bareback*[tiab] OR condom*[tiab] OR prostitution[tiab] OR safe sex[tiab] OR unsafe sex[tiab])
10	#4 OR #5 OR #6 OR #7 OR #8 OR #9
11	#3 AND #10
12	social environment[mesh:noexp] OR community networks[mesh:noexp] OR social support[mesh:noexp]
13	(social network*[tiab] OR community network*[tiab] OR social support[tiab])
14	#12 OR #13
15	#11 AND #14
16	"evaluation studies"[pt] OR "evaluation studies as topic"[mesh:noexp] OR "program evaluation"[mesh:noexp] OR "validation studies as topic"[mesh:noexp] OR (pre-[tiab] AND post-[tiab]) OR (pretest[tiab] AND posttest[tiab]) OR (program*[tiab] AND (evaluat*[tiab] OR effectiveness[tiab])) OR intervention[tiab]
17	"Clinical Trial" [PT:NoExp] OR "clinical trial, phase i"[pt] OR "clinical trial, phase ii"[pt] OR "clinical trial, phase iii"[pt] OR "clinical trial, phase iv"[pt] OR "controlled clinical trial"[pt] OR "multicenter study"[pt] OR "randomized controlled trial"[pt] OR "Clinical Trials as Topic"[mesh:noexp] OR "clinical trials, phase i as topic"[MeSH Terms:noexp] OR "clinical trials, phase ii as topic"[MeSH Terms:noexp] OR "clinical trials, phase iii as topic"[MeSH Terms:noexp] OR "clinical trials, phase iv as topic"[MeSH Terms:noexp] OR "controlled clinical trials as topic"[MeSH Terms:noexp] OR "randomized controlled trials as topic"[MeSH Terms:noexp] OR "early termination of clinical trials"[MeSH Terms:noexp] OR "multicenter studies as topic"[MeSH Terms:noexp] OR “Double-Blind Method”[Mesh] OR ((randomised[TIAB] OR randomized[TIAB]) AND (trial[TIAB] OR trials[tiab])) OR ((single[TIAB] OR double[TIAB] OR doubled[TIAB] OR triple[TIAB] OR tripled[TIAB] OR treble[TIAB] OR treble[TIAB]) AND (blind*[TIAB] OR mask*[TIAB])) OR ("4 arm"[tiab] OR "four arm"[tiab])
18	#16 OR #17
19	#15 AND #18
20	#19 AND english[la]

Appendix C: AMSTAR 2 Form

AMSTAR 2

1. Did the research questions and inclusion criteria for the review include the components of PICO?

For Yes:
- ☐ Population
- ☐ Intervention
- ☐ Comparator group
- ☐ Outcome

Optional (recommended)
- ☐ Timeframe for follow-up

☐ Yes
☐ No

2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?

For Partial Yes:
The authors state that they had a written protocol or guide that included ALL the following:
- ☐ review question(s)
- ☐ a search strategy
- ☐ inclusion/exclusion criteria
- ☐ a risk of bias assessment

For Yes:
As for partial yes, plus the protocol should be registered and should also have specified:
- ☐ a meta-analysis/synthesis plan, if appropriate, *and*
- ☐ a plan for investigating causes of heterogeneity
- ☐ justification for any deviations from the protocol

☐ Yes
☐ Partial Yes
☐ No

3. Did the review authors explain their selection of the study designs for inclusion in the review?

For Yes, the review should satisfy ONE of the following:
- ☐ *Explanation for* including only RCTs
- ☐ OR *Explanation for* including only NRSI
- ☐ OR *Explanation for* including both RCTs and NRSI

☐ Yes
☐ No

4. Did the review authors use a comprehensive literature search strategy?

For Partial Yes (all the following):
- ☐ searched at least 2 databases (relevant to research question)
- ☐ provided key word and/or search strategy
- ☐ justified publication restrictions (eg, language)

For Yes, should also have (all the following):
- ☐ searched the reference lists/bibliographies of included studies
- ☐ searched trial/study registries
- ☐ included/consulted content experts in the field
- ☐ where relevant, searched for grey literature
- ☐ conducted search within 24 months of completion of the review

☐ Yes
☐ Partial Yes
☐ No

5. Did the review authors perform study selection in duplicate?

For Yes, either ONE of the following:
- ☐ at least two reviewers independently agreed on selection of eligible studies and achieved consensus on which studies to include
- ☐ OR two reviewers selected a sample of eligible studies and achieved good agreement (at least 80 per cent), with the remainder selected by one reviewer

☐ Yes
☐ No

6. Did the review authors perform data extraction in duplicate?

For Yes, either ONE of the following: ☐ at least two reviewers achieved consensus on which data to extract	☐ Yes

from included studies
- ☐ OR two reviewers extracted data from a sample of eligible studies and achieved good agreement (at least 80 per cent), with the remainder extracted by one reviewer

☐ No

7. Did the review authors provide a list of excluded studies and justify the exclusions?

For Partial Yes:
- ☐ provided a list of all potentially relevant studies that were read in full text form but excluded from the review

For Yes, must also have:
- ☐ Justified the exclusion from the review of each potentially relevant study

☐ Yes
☐ Partial Yes
☐ No

8. Did the review authors describe the included studies in adequate detail?

For Partial Yes (ALL the following):
- ☐ described populations
- ☐ described interventions
- ☐ described comparators
- ☐ described outcomes
- ☐ described research designs

For Yes, should also have ALL the following:
- ☐ described population in detail
- ☐ described intervention and comparator in detail (including doses where relevant)
- ☐ described study's setting
- ☐ timeframe for follow-up

☐ Yes
☐ Partial Yes
☐ No

9. Did the review authors use a satisfactory technique for assessing the risk of bias (RoB) in individual studies that were included in the review?

RCTs

For Partial Yes, must have assessed RoB from
- ☐ unconcealed allocation, *and*
- ☐ lack of blinding of patients and assessors when assessing outcomes (unnecessary for objective outcomes such as all cause mortality)

For Yes, must also have assessed RoB from:
- ☐ allocation sequence that was not truly random, *and*
- ☐ selection of the reported result from among multiple measurements or analyses of a specified outcome

☐ Yes
☐ Partial Yes
☐ No
☐ Includes only NRSI

NRSI

For Partial Yes, must have assessed RoB:
- ☐ from confounding, *and*
- ☐ from selection bias

For Yes, must also have assessed RoB:
- ☐ methods used to ascertain exposures and outcomes, *and*
- ☐ selection of the reported result from among multiple measurements or analyses of a specified outcome

☐ Yes
☐ Partial Yes
☐ No
☐ Includes only RCTs

10. Did the review authors report on the sources of funding for the studies included in the review?

For Yes
- ☐ Must have reported on the sources of funding for individual studies included in the review. Note: Reporting that the reviewers looked for this information but it was not reported by study authors also qualifies

☐ Yes
☐ No

11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?

RCTs

For Yes:
- ☐ The authors justified combining the data in a meta-analysis
  - ☐ AND they used an appropriate weighted technique to combine study results and adjusted for heterogeneity if present

☐ Yes
☐ No
☐ No meta-analysis

☐ AND investigated the causes of any heterogeneity	conducted
For NRSI For Yes: ☐ The authors justified combining the data in a meta-analysis ☐ AND they used an appropriate weighted technique to combine study results, adjusting for heterogeneity if present ☐ AND they statistically combined effect estimates from NRSI that were adjusted for confounding, rather than combining raw data, or justified combining raw data when adjusted effect estimates were not available ☐ AND they reported separate summary estimates for RCTs and NRSI separately when both were included in the review	☐ Yes ☐ No ☐ No meta-analysis conducted
12. If meta-analysis was performed, did the review authors assess the potential impact of RoB in individual studies on the results of the meta-analysis or other evidence synthesis?	
For Yes: ☐ included only low risk of bias RCTs ☐ OR, if the pooled estimate was based on RCTs and/or NRSI at variable RoB, the authors performed analyses to investigate possible impact of RoB on summary estimates of effect	☐ Yes ☐ No ☐ No meta-analysis conducted
13. Did the review authors account for RoB in individual studies when interpreting/discussing the results of the review?	
For Yes: ☐ included only low risk of bias RCTs ☐ OR, if RCTs with moderate or high RoB, or NRSI were included the review provided a discussion of the likely impact of RoB on the results	☐ Yes ☐ No
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	
For Yes: ☐ There was no significant heterogeneity in the results ☐ OR if heterogeneity was present the authors performed an investigation of sources of any heterogeneity in the results and discussed the impact of this on the results of the review	☐ Yes ☐ No
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias (small study bias) and discuss its likely impact on the results of the review?	
For Yes: ☐ performed graphical or statistical tests for publication bias and discussed the likelihood and magnitude of impact of publication bias	☐ Yes ☐ No ☐ No meta-analysis conducted
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	

For Yes:

- ☐ The authors reported no competing interests OR
- ☐ The authors described their funding sources and how they managed potential conflicts of interest

☐ Yes
☐ No

Appendix D: Coding & Data Extraction Form User Instructions

Coding & Data Entry Rules for Systematic Review on Social Network Interventions for STI Risk Reduction in MSM

1.1 Instructions for the coder

- All coders will complete training and must code at least 3 studies satisfactorily before being certified for further coding. If you are the coder/PI, pretest the coding form on 3 studies. After any adjustments that are indicated, have another trained person code the same studies independently and check agreement.
- Keep the study aims and definitional authorities handy when coding a study.
- Check the eligibility criteria (1st section in the coding form) before proceeding and discuss eligibility concerns with the PI/your adviser as soon as possible.

1.2 Eligibility criteria

- Study participants should be MSM
- Purpose/aim of intervention study should be on impacting STI transmission (STI risk reduction)
- Intervention should have a primary social network component (intervention functions by targeting member ties and network structure as units of change rather than at the individual level). This means mechanistically, the primary effects of the intervention should be attributable to the social network component of the intervention. Interventions may incorporate other components in addition to the network component, but the network component should by primary.
- The study should involve outcomes that are behavioral (e.g. condom use), biological (e.g. STI disease status), and/or psychosocial (e.g. safe sex attitudes)

1.3 Coding Rules- Overall

- Code studies, NOT citations; do provide a reference to the citation and page # for each item coded.
- If 1 study has been published in 3 citations, you will use only 1 coding form for that study and list all citations in the citation section.

- If 2 studies have been explained in 1 citation, you will use 2 coding forms—1 for each study.
- For each study that is coded, enter information at all levels following the study section.
- Either CHECK the appropriate field or SPECIFY details based on instructions on the coding form.
- Enter ‘NOT SPECIFIED’ if the information is not available in the manuscript, although you should list what is reported even if it is not of the desired specificity.
- If the coding field requires a number (n) to be entered and the manuscript only reports a percentage, then you should report the percentage instead and try to establish the denominator.

Appendix E: Coding & Data Extraction Form

Coding & Data Entry Form for Social Network Interventions in MSM
Citation (C), Study (S), Exposure (E), Outcome (O) Levels

ID	Variable Name (Coding Instructions)	Values, Text Codes	
Eligibility Criteria (Note: Must meet all; if any criterion is in doubt, stop and check with the PI.)			
E 1	Participants must be primarily MSM (75%). Studies may therefore include men who identify as heterosexual but still engage in sexual activity with men, as well as a minority (<25%) of individual categorized in other ways (e.g. transsexual).		Check if "yes."
E 2	Intervention should contain a primary social networks component. A social network component intervention functions by targeting member ties and network structure as units of change rather than at the individual level. Interventions may incorporate other components in addition to the network component, but the network component should be primary.		Check if "yes."
E 3	Overall study purpose should be reduction of STI transmission		Check if "yes."
E 4	Study should report behavioral (e.g. condom use), biological (e.g. STI disease status), and/or psychosocial (e.g. safe sex attitudes) outcomes		Check if "yes."
Citation Information			
C 1	**Ref Works ID (main citation)**		
C 2	**Name of coder**		
C 3	**Publication Date**		
C 4	**Author**		
C 5	**Type of report**		Full text (from journal article)
			Abstract (from conference paper/poster)
			Other (specify):
C 6	**Secondary cite(s) –** Ref Works ID, publication date, author Note: Explain relation to other citations, e.g., "Contains data from later follow-ups."		
C7	**Number of studies reported in this citation**		Default=1
Study Level Information (CONSORT and TREND)			
S 1	**Study ID**		Default=1. If >1, use additional forms for each additional study with the same citation level information.
S 2	**Sponsor** (Check one)		Industry
			Govt (Specify)
			Other *(*Specify*)*
			NR

S 3	**Study design**		Randomized clinical trial – CONSORT definition
			Non-randomized trial – TREND definition
			Cluster group randomized clinical trial – CONSORT cluster definition
			Other (specify):
S 4	**Study Location– City, State, Country**		
S 5	**Study enrollment years**		
S 6	**Type of sexually transmitted infection** (Check all that apply)		HIV
			Gonorrhea
			Chlamydia
			Syphilis
			Other
S 7	**Recruitment methods**		
S 8	**Recruitment setting**		
S 9	**Control or comparison group type of treatment**		
S 10	**Sample size of control/ comparison group**		N (individuals)
	***report for baseline and final follow-up (#/#)**		N (# of units)
S 11	**Group Assignment Method (e.g. random, matched, RDS-type)**		
S12	**Bias minimization method if non-random assignment (e.g. matching)**		
S13	**Cluster unit description**		
S 14	**Cluster matching procedure**		
S 16	**Age** (Complete all that apply; Enter # in all study groups)		Lowest age
			Highest age
			Mean (SD) age
			Median age
			Age not described
			Age categories (specify)
S 17	**Race/ethnicity** (Complete all that apply; Enter # in all study groups)		African American
			Asian
			American Indian
			Hispanic
			Other

			Non-Hispanic White
			Described Otherwise (specify):
			Race/ethnicity not described
S 18	**SES** (Education, income, SES categories, and/or proxy for SES-specify in all study groups)		
S 19	**Number of exposure/treatment groups**		Default=1
Intervention Level Information			
I 1	**Exposure/treatment group ID**		Default=1
I 2	**Sample size of intervention arm**		
I 3	**Type of network intervention (Valente, 2012)**		Individual[1]
			Segmentation[2]
			Induction[3]
			Alteration[4]
I 4	**Setting of intervention**		
I 5	**Deliverer of intervention**		
I 6	**Timespan of intervention (overall)**		
I 7	**General intervention timing** ***qualitative code encompassing frequency, duration of sessions, etc… other aspects related to timing**		
I 8	**Network mapping of intervention** ***as part of intervention development, an explicit effort is made to obtain information about network structure in order to inform development of the intervention**		Network mapping occurred
			Network metrics calculated
			Network metrics used in intervention design
I 9	**Network mapping strategy (Valente, 2012)** ***if an effort is made to map network structure and/or obtain information about network structure to inform intervention development, what was used/information gathered**		Centrality
			Bridging
			Exposure
			Group detection
			RDS
			Group-leader matching
I 9	**Number of outcomes**		Default=1
I 10	**Measurement times** (Enter mean/median follow-up periods		
Outcome Level			
O 1	**Outcome/subgroup ID**		Default=1. If >1, use additional forms for each additional outcome/subgroup, with the same citation, study, and exposure or treatment level information.
O 2	**Type of outcome reported**		Behavioral

	(Check all that apply)		Biological (disease status)
			Psychosocial
			Network
Measurement Level			
M 1	**Psychosocial (Brull et al. 2016 psychosocial variable SR)**		Constructs for status communication to partner
			Constructs for risky sexual behaviors
			Constructs for safe sex behaviors
			Other
M 2	**Behavioral (dimensions of condom use measurement from Noar & Fonner et al. 2015 SR)**		Type of sexual partner (main, frequent/side, casual)
			Temporal period (length of time)
			Measurement scale (frequency)
			Consistency of Condom Use
			Type of sex
			Other
M 3	**Biological (disease status)**		Diseases status
M 4	**Social network (change in social network structure)** ***does the study not only measure health/psychosocial outcomes, but also changes in the social network. This is important as it reflects if social processes were a cause of changes in health outcomes as these are the mechanisms through which network interventions should work. This is analogous to for standard individual behavior change interventions, e.g. in an exercise intervention, we can see if they have improved heart rate and VO2 max (health outcomes), but to say it worked as intended their accelerometers must show they actually increased activity and these improvements aren't from some other reason.**		Nodes added
			Nodes removed
			Node property changed
			Ties added
			Ties removed
			Ties changed

[1] Individual: intervention relies on identifying a "node" based on some network property. Most common example of this are "Opinion Leader" interventions. Nodes may chosen due to characteristics such as network centrality or bridging potential.

[2] Segmentation: intervention is directed to groups of individuals. Segmentation interventions identify and expect a whole group to adopt something new at the same time, e.g. finding groups of densely connected nodes.

[3] Induction: excitation of the network occurs such that novel interaction between individuals are activated. I.e. these intervention stimulate or force peer-to-peer interactions to create cascades of in behavioral/information diffusion. For example, word-of-mouth interventions (using social media) or snowball interventions where people recruit others.

[4] Alteration: intervention that change the network through add/deleting nodes, adding/deleting links, re-wiring existing links. E.g. removing certain nodes in sexual contact networks or introducing a new node such an AA program.

REFERENCES

Agresti, A., & Agresti, B. F. (1978). Statistical analysis of qualitative variation. Sociological Methodology, 9, 204-237.

Almedom, A. M. (2005). Social capital and mental health: An interdisciplinary review of primary evidence. Social Science & Medicine, 61(5), 943-964.

Altschuler, A., Somkin, C. P., & Adler, N. E. (2004). Local services and amenities, neighborhood social capital, and health. Social Science & Medicine, 59(6), 1219-1229.

Amirkhanian, Y. A., Kelly, J. A., Kabakchieva, E., Kirsanova, A. V., Vassileva, S., Takacs, J., & Mocsonaki, L. (2005). A randomized social network HIV prevention trial with young men who have sex with men in Russia and Bulgaria. AIDS, 19(16), 1897-1905.

Amirkhanian, Y. A., Kelly, J. A., Kabakchieva, E., McAuliffe, T. L., & Vassileva, S. (2003). Evaluation of a social network HIV prevention intervention program for young men who have sex with men in Russia and Bulgaria. AIDS Education and Prevention, 15(3), 205-220.

Amirkhanian, Y. A., Kelly, J. A., Takacs, J., McAuliffe, T. L., Kuznetsova, A. V., Toth, T. P., & Meylakhs, A. (2015). Effects of a social network HIV/STD prevention intervention for men who have sex with men in Russia and Hungary: a randomized controlled trial. AIDS (London, England), 29(5), 583.

Bertolini, S., & Bravo, G. (2004). Social capital, a multidimensional concept. http://www. ex. ac. uk/shipss/politics/research/socialcapital/other/bertolini. pdf> Acesso em, 17(10), 1-16.

Borgatti, S.P. (2006). E-Network Software for Ego-Network Analysis. Analytic Technologies: Lexington, KY.

Borgatti, S.P., Everett, M.G. and Freeman, L.C. (2002). Ucinet for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.

Borgatti, S.P., Everett, M.G., & Johnson, J.C. (2018). Analyzing Social Networks. Sage.

Borgatti, S.P., Jones, C., & Everett, M.G. (1998). Network measures of social capital. Connections, 21(2), 27-36.

Borgatti, S.P., Mehra, A., Brass, D.J., and Labianca, G. (2009). "Network analysis in the social sciences." Science 323, no. 5916: 892-895.

Bourdieu, P. (1989). Social space and symbolic power. Sociological Theory, 7(1), 14-25.

Bourdieu, P., & Wacquant, L. (1992). Réponses (Vol. 4). Paris: Seuil.

Boyce, W. F., Davies, D., Gallupe, O., & Shelley, D. (2008). Adolescent risk taking, neighborhood social capital, and health. Journal of Adolescent Health, 43(3), 246-252.

Burt, R.S. (1992). Structural Holes. Cambridge: Cambridge University Press.

Carpiano, R. M. (2006). Toward a neighborhood resource-based theory of social capital for health: Can Bourdieu and sociology help?. Social Science & Medicine, 62(1), 165-175.

Centers for Disease Control and Prevention. (2017, November 29). HIV surveillance report, 2016; vol. 28. Retrieved from http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html

City of New Orleans City Planning Commission. (2019, April 15). Comprehensive zoning ordinance. Retrieved from https://www.nola.gov/city-planning/czo/

Coleman, J. S. (2000). Social capital in the creation of human capital. In Knowledge and Social Capital (pp. 17-41).

Crossley, N., Bellotti, E., Edwards, G., Everett, M. G., Koskinen, J., & Tranmer, M. (2015). Social network analysis for ego-nets: Social network analysis for actor-centered networks. Sage.

Davey, M. A., Latkin, C. A., Hua, W., Tobin, K. E., & Strathdee, S. (2007). Individual and social network factors that predict entry to drug treatment. American Journal on Addictions, 16(1), 38-45.

DeCarlo, P. & Ekstrand, M. (2016). How does stigma affect HIV prevention and treatment? Community Engagement Core, University of San Francisco Center for AIDS Prevention Studies Prevention Research Center, Division of Prevention Sciences.

Dolfsma, W., & Dannreuther, C. (2003). Subjects and boundaries: Contesting social capital-based policies. Journal of Economic Issues, 37(2), 405-413.

Eriksson, M. (2011). Social capital and health–implications for health promotion. Global Health Action, 4(1), 5611.

Feld, S. L. (1991). Why your friends have more friends than you do. American Journal of Sociology, 96(6), 1464-1477.

Foley, M. W., & Edwards, B. (1997). Editors' introduction: Escape from politics? Social theory and the social capital debate. 550-561.

Friedman, S. R., Downing, M. J., Smyrnov, P., Nikolopoulos, G., Schneider, J. A., Livak, B., ... & Psichogiou, M. (2014). Socially-integrated transdisciplinary HIV prevention. AIDS and Behavior, 18(10), 1821-1834.

Fujimoto, K., Cao, M., Kuhns, L. M., Li, D., & Schneider, J. A. (2018). Statistical adjustment of network degree in respondent-driven sampling estimators: Venue attendance as a proxy for network size among young MSM. Social Networks, 54, 118-131.

Fujimoto, K., Turner, R., Kuhns, L. M., Kim, J. Y., Zhao, J., & Schneider, J. A. (2017). Network centrality and geographical concentration of social and service venues that serve young men who have sex with men. AIDS and Behavior, 21(12), 3578-3589.

Fujimoto, K., Williams, M. L., & Ross, M. W. (2013). Venue-based affiliation networks and HIV risk-taking behavior among male sex workers. Sexually Transmitted Diseases, 40(6), 453.

Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Indicators of socioeconomic position (part 1). Journal of Epidemiology & Community Health, 60(1), 7-12.

Gittel, R., & Vidal, A. (1998). Community organizing: building social capital as a development strategy Sage. Thousand Oaks.

Granovetter, M. S. (1977). The strength of weak ties. In Social Networks (pp. 347-367). Academic Press.

Halkitis, P. N., Kupprat, S. A., McCree, D. H., Simons, S. M., Jabouin, R., Hampton, M. C., & Gillen, S. (2011). Evaluation of the relative effectiveness of three HIV testing strategies targeting African American men who have sex with men (MSM) in New York City. Annals of Behavioral Medicine, 42(3), 361-369.

Halkitis, P. N., Parsons, J. T., Wolitski, R. J., & Remien, R. H. (2003). Characteristics of HIV antiretroviral treatments, access and adherence in an ethnically diverse sample of men who have sex with men. AIDS Care, 15(1), 89-102.

Hall, H. I., Song, R., Rhodes, P., Prejean, J., An, Q., Lee, L. M., ... & Janssen, R. S. (2008). Estimation of HIV incidence in the United States. JAMA, 300(5), 520-529.

Halpern, D. (2005). Social Capital. Cambridge: Polity Press.

Hamilton, C. J., & Mahalik, J. R. (2009). Minority stress, masculinity, and social norms predicting gay men's health risk behaviors. Journal of Counseling Psychology, 56(1), 132.

Harpham, T., Grant, E., & Thomas, E. (2002). Measuring social capital within health surveys: key issues. Health Policy and Planning, 17(1), 106-111.

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. Behavior Research Methods, 39(4), 709-722.

Harawa, N. T., Brewer, R., Buckman, V., Ramani, S., Khanna, A., Fujimoto, K., & Schneider, J. A. (2018). HIV, Sexually Transmitted Infection, and Substance Use Continuum of Care Interventions Among Criminal Justice–Involved Black Men Who Have Sex With Men: A Systematic Review. American Journal of Public Health, 108(S4), e1-e9.

Healy, T. (2002). The measurement of social capital at international level. Social Capital: The Challenge of International Measurement Series of the Organization for Economic Co-operation and Development (OECD). Paris: OECD.

Hesterberg, T., Moore, D. S., Monaghan, S., Clipson, A., & Epstein, R. (2005). Bootstrap methods and permutation tests. Introduction to the Practice of Statistics, 5, 1-70.

Hosek, S. G., Lemos, D., Hotton, A. L., Fernandez, M. I., Telander, K., Footer, D., & Bell, M. (2015). An HIV intervention tailored for black young men who have sex with men in the House Ball Community. AIDS Care, 27(3), 355-362.

Irvin, R., Wilton, L., Scott, H., Beauchamp, G., Wang, L., Betancourt, J., ... & Buchbinder, S. (2014). A study of perceived racial discrimination in Black men who have sex with men (MSM) and its association with healthcare utilization and HIV testing. AIDS and Behavior, 18(7), 1272-1278.

Jenness, S. M., Goodreau, S. M., & Morris, M. (2018). EpiModel: an R package for mathematical modeling of infectious disease over networks. Journal of statistical software, 84.

Johnson, C. V., Mimiaga, M. J., Reisner, S. L., Tetu, A. M., Cranston, K., Bertrand, T., ... & Mayer, K. H. (2009). Health care access and sexually transmitted infection screening frequency among at-risk Massachusetts men who have sex with men. American Journal of Public Health, 99(S1), S187-S192.

Kalichman, S. C., Simbayi, L. C., Cain, D., Carey, K. B., Carey, M. P., Eaton, L., ... & Mwaba, K. (2013). Randomized community-level HIV prevention intervention trial for men who drink in South African alcohol-serving venues. The European Journal of Public Health, 24(5), 833-839.

Kass, N., Flynn, C., Jacobson, L., Chmiel, J. S., & Bing, E. G. (1999). Effect of race on insurance coverage and health service use for HIV-infected gay men. JAIDS and Human Retrovirology: Official Publication of the International Retrovirology Association, 20(1), 85-92.

Kawachi, I., & Berkman, L. (2000). Social cohesion, social capital, and health. Social Epidemiology, 174, 190.

Kawachi, I., Kennedy, B. P., & Glass, R. (1999). Social capital and self-rated health: a contextual analysis. American Journal of Public Health, 89(8), 1187-1193.

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. American Journal of Public Health, 87(9), 1491-1498.

Kawachi, I., Kim, D., Coutts, A., & Subramanian, S. V. (2004). Commentary: Reconciling the three accounts of social capital. International Journal of Epidemiology, 33(4), 682-690.

Kawachi, I., Subramanian, S. V., & Kim, D. (2008). Social capital and health. In Social Capital and Health (pp. 1-26). Springer New York.

Kelly, B. C., Carpiano, R. M., Easterbrook, A., & Parsons, J. T. (2012). Sex and the community: the implications of neighbourhoods and social networks for sexual risk behaviours among urban gay men. Sociology of Health & Illness, 34(7), 1085-1102.

Kelly, J. A., Murphy, D. A., Sikkema, K. J., McAuliffe, T. L., Roffman, R. A., Solomon, L. J., ... & Collaborative, T. C. H. P. R. (1997). Randomised, controlled, community-level HIV-

prevention intervention for sexual-risk behaviour among homosexual men in US cities. The Lancet, 350(9090), 1500-1505.

Kelly, J. A., St. Lawrence, J. S., Diaz, Y. E., Stevenson, L. Y., Hauth, A. C., Brasfield, T. L., ... & Andrew, M. E. (1991). HIV risk behavior reduction following intervention with key opinion leaders of population: an experimental analysis. American Journal of Public Health, 81(2), 168-171.

Khanna, A.S., Schneider, J.A., Collier, N., Ozik, J.,... Fujimoto K., & Hawara, N.T. (2019). A modeling framework to inform PrEP initiation and retention scale-up in the context of Getting to Zero Initiatives. AIDS. (In Press)

Kim, D. A., Hwong, A. R., Stafford, D., Hughes, D. A., O'Malley, A. J., Fowler, J. H., & Christakis, N. A. (2015). Social network targeting to maximise population behaviour change: a cluster randomised controlled trial. The Lancet, 386(9989), 145-153.

Kim, D., Subramanian, S. V., & Kawachi, I. (2006). Bonding versus bridging social capital and their associations with self rated health: a multilevel analysis of 40 US communities. Journal of Epidemiology & Community Health, 60(2), 116-122.

Kinsler, J. J., Wong, M. D., Sayles, J. N., Davis, C., & Cunningham, W. E. (2007). The effect of perceived stigma from a health care provider on access to care among a low-income HIV-positive population. AIDS Patient Care and STDs, 21(8), 584-592.

Ko, N. Y., Hsieh, C. H., Wang, M. C., Lee, C., Chen, C. L., Chung, A. C., & Hsu, S. T. (2013). Effects of Internet popular opinion leaders (iPOL) among Internet-using men who have sex with men. Journal of Medical Internet Research, 15(2), e40.

Koblin, B. A., Husnik, M. J., Colfax, G., Huang, Y., Madison, M., Mayer, K., ... & Buchbinder, S. (2006). Risk factors for HIV infection among men who have sex with men. AIDS, 20(5), 731-739.

Krackhardt, D. (1987). Cognitive social structures. Social Networks, 9(2), 109-134.

Krackhardt, D., & Kilduff, M. (1999). Whether close or far: Social distance effects on perceived balance in friendship networks. Journal of personality and social psychology, 76(5), 770.

Krackhardt, D., & Stern, R. N. (1988). Informal networks and organizational crises: An experimental simulation. Social psychology quarterly, 123-140.

Kumar, V., Krackhardt, D., & Feld, S. (2018). Network interventions based on inversity: Leveraging the friendship paradox in unknown network structures. Working Paper, Yale University.

Lakon, C. M., Godette, D. C., & Hipp, J. R. (2008). Network-based approaches for measuring social capital. In Social capital and health (pp. 63-81). Springer, New York, NY.

Latkin, C.A., 1998. Outreach in natural settings: the use of peer leaders for HIV prevention among injecting drug users' networks. Public health reports, 113(Suppl 1), p.151.

Latkin, C. A., & Knowlton, A. R. (2015). Social network assessments and interventions for health behavior change: a critical review. Behavioral Medicine, 41(3), 90-97.

Latkin, C. A., Sherman, S., & Knowlton, A. (2003). HIV prevention among drug users: outcome of a network-oriented peer outreach intervention. Health Psychology, 22(4), 332.

Lin, N. (2002). Social capital: A theory of social structure and action (Vol. 19). Cambridge University Press.

Lin, N. (2017). Building a network theory of social capital. In Social Capital (pp. 3-28). Routledge.

Lochner, K. A., Kawachi, I., Brennan, R. T., & Buka, S. L. (2003). Social capital and neighborhood mortality rates in Chicago. Social Science & Medicine, 56(8), 1797-1805.

Lyles, C. M., Kay, L. S., Crepaz, N., Herbst, J. H., Passin, W. F., Kim, A. S., ... & Mullins, M. M. (2007). Best-evidence interventions: findings from a systematic review of HIV behavioral interventions for US populations at high risk, 2000–2004. American Journal of Public Health, 97(1), 133-143.

Lynch, S. M. (2007). Introduction to Applied Bayesian Statistics and Estimation for Social scientists. Springer Science & Business Media.

Lynch, J., Due, P., Muntaner, C., & Smith, G. D. (2000). Social capital—is it a good investment strategy for public health?. Journal of Epidemiology & Community Health, 54(6), 404-408.

Maulsby, C., Millett, G., Lindsey, K., Kelley, R., Johnson, K., Montoya, D., & Holtgrave, D. (2014). HIV among black men who have sex with men (MSM) in the United States: a review of the literature. AIDS and Behavior, 18(1), 10-25.

McHugh, M. L. (2012). Interrater reliability: the kappa statistic. Biochemia Medica: Biochemia Medica, 22(3), 276-282.

McKenzie, K., Whitley, R., & Weich, S. (2002). Social capital and mental health. The British Journal of Psychiatry, 181(4), 280-283.

McKirnan, D. J., Du Bois, S. N., Alvy, L. M., & Jones, K. (2013). Health care access and health behaviors among men who have sex with men: the cost of health disparities. Health Education & Behavior, 40(1), 32-41.

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. Annual Review of Sociology, 27(1), 415-444.

Millett, G. A., Peterson, J. L., Wolitski, R. J., & Stall, R. (2006). Greater risk for HIV infection of black men who have sex with men: a critical literature review. American Journal of Public Health, 96(6), 1007-1019.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Prisma Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Medicine, 6(7), e1000097.

Mohseni, M., & Lindstrom, M. (2007). Social capital, trust in the health-care system and self-rated health: the role of access to health care in a population-based study. Social Science & Medicine, 64(7), 1373-1383.

Morgan, E., Skaathun, B., Nikolopoulos, G. K., Paraskevis, D., Williams, L. D., Smyrnov, P., ... & Schneider, J. A. (2019). A network intervention to locate newly HIV infected persons within MSM networks in Chicago. AIDS and Behavior, 23(1), 15-20.

Mullen, P. D., Ramirez, G., Strouse, D., Hedges, L. V., & Sogolow, E. (2002). Meta-analysis of the effects of behavioral HIV prevention interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. JAIDS, 30, S94-S105.

Nikolopoulos, G. K., Pavlitina, E., Muth, S. Q., Schneider, J., Psichogiou, M., Williams, L. D., ... & Korobchuk, A. (2016). A network intervention that locates and intervenes with recently HIV-infected persons: the Transmission Reduction Intervention Project (TRIP). Scientific Reports, 6, 38100.

Onyx, J., & Bullen, P. (2000). Measuring social capital in five communities. The Journal of Applied Behavioral Science, 36(1), 23-42.

Orne, J. (2017). Boystown: Sex and Community in Chicago. University of Chicago Press.

Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. International Journal of the Addictions, 21(9-10), 961-976.

Perry, B. L., Pescosolido, B. A., & Borgatti, S. P. (2018). Egocentric Network Analysis: Foundations, Methods, and Models. Cambridge University Press.

Pitkin Derose, K., & Varda, D. M. (2009). Social capital and health care access: a systematic review. Medical Care Research and Review, 66(3), 272-306.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879.

Preacher, K. J., & Kelley, K. (2011). Effect size measures for mediation models: quantitative strategies for communicating indirect effects. Psychological Methods, 16(2), 93.

Putnam, R. 1995. "Bowling alone: America's declining social capital." Journal of Democracy 6(1):65-78.

Robison, L. J., Schmid, A. A., & Siles, M. E. (2002). Is social capital really capital?. Review of Social Economy, 60(1), 1-21.

Rogers, E. M. (2010). Diffusion of innovations. Simon and Schuster.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. Science, 277(5328), 918-924.

Schneider, J. A. (2013). Sociostructural 2-mode network analysis: critical connections for HIV transmission elimination.

Schneider, J., Cornwell, B., Jonas, A., Lancki, N., Behler, R., Skaathun, B., ... & Khanna, A. S. (2017). Network dynamics of HIV risk and prevention in a population-based cohort of young Black men who have sex with men. Network Science, 5(3), 381-409.

Schneider, J. A., Cornwell, B., Ostrow, D., Michaels, S., Schumm, P., Laumann, E. O., & Friedman, S. (2013). Network mixing and network influences most linked to HIV infection and risk behavior in the HIV epidemic among black men who have sex with men. American Journal of Public Health, 103(1), e28-e36.

Schneider, J. A., Walsh, T., Cornwell, B., Ostrow, D., Michaels, S., & Laumann, E. O. (2012). HIV health center affiliation networks of black men who have sex with men: Disentangling fragmented patterns of HIV prevention service utilization. Sexually Transmitted Diseases, 39(8), 598.

Schneider, J. A., Zhou, A. N., & Laumann, E. O. (2015). A new HIV prevention network approach: sociometric peer change agent selection. Social Science & Medicine, 125, 192-202.

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. Psychological Science, 18(5), 429-434.

Shea, B. J., Reeves, B. C., Wells, G., Thuku, M., Hamel, C., Moran, J., ... & Henry, D. A. (2017). AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ, 358, j4008.

Shelton, R. C., Lee, M., Brotzman, L. E., Crookes, D. M., Jandorf, L., Erwin, D., & Gage-Bouchard, E. (2018). Use of social network analysis in the development, dissemination, implementation, and sustainability of health behavior interventions for adults: A systematic review. Social Science & Medicine, 220, 81-101.

Smith, K. P., & Christakis, N. A. (2008). Social networks and health. Annu. Rev. Sociol, 34, 405-429.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. Sociological Methodology, 13, 290-312.

Song, L., & Lin, N. (2009). Social capital and health inequality: evidence from Taiwan. Journal of Health and Social Behavior, 50(2), 149-163.

Stone, W. (2001). Measuring social capital. Research Papers: Australian Institute of Family Studies, 24, 1-46.

Sudarshi, D., Pao, D., Murphy, G., Parry, J., Dean, G., & Fisher, M. (2008). Missed opportunities for diagnosing primary HIV infection. Sexually Transmitted Infections, 84(1), 14-16.

Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. International Journal of Epidemiology, 33(4), 650-667.

Valente, T. W. (2010). Social networks and health: Models, methods, and applications (Vol. 1). New York: Oxford University Press.

Valente, T. W. (2012). Network interventions. Science, 337(6090), 49-53.

Valente, T. W., & Fujimoto, K. (2010). Bridging: locating critical connectors in a network. Social Networks, 32(3), 212-220.

Valente, T. W., Palinkas, L. A., Czaja, S., Chu, K. H., & Brown, C. H. (2015). Social network analysis for program implementation. PloS One, 10(6), e0131712.

Valleroy, L. A., MacKellar, D. A., Karon, J. M., Rosen, D. H., McFarland, W., Shehan, D. A., & Thiede, H. (2000). HIV prevalence and associated risks in young men who have sex with men. JAMA, 284(2), 198-204.

van de Laar, T., Pybus, O., Bruisten, S., Brown, D., Nelson, M., Bhagani, S., ... & Gőtz, H. (2009). Evidence of a large, international network of HCV transmission in HIV-positive men who have sex with men. Gastroenterology, 136(5), 1609-1617.

Viladrich, A. (2007). From “shrinks” to “urban shamans”: Argentine immigrants’ therapeutic eclecticism in New York City. Culture, Medicine and Psychiatry, 31(3), 307-328.

Vonville, H. (2015). Excel workbooks for systematic reviews.

Wang, K., Brown, K., Shen, S. Y., & Tucker, J. (2011). Social network-based interventions to promote condom use: a systematic review. AIDS and Behavior, 15(7), 1298.

Weitzman, E. R., & Kawachi, I. (2000). Giving means receiving: the protective effect of social capital on binge drinking on college campuses. American Journal of Public Health, 90(12), 1936.

Young, S. D., Cumberland, W. G., Lee, S. J., Jaganath, D., Szekeres, G., & Coates, T. (2013). Social networking technologies as an emerging tool for HIV prevention: a cluster randomized trial. Annals of Internal Medicine, 159(5), 318-324.

Young, S. D., Holloway, I., Jaganath, D., Rice, E., Westmoreland, D., & Coates, T. (2014). Project HOPE: online social network changes in an HIV prevention randomized controlled trial for African American and Latino men who have sex with men. American Journal of Public Health, 104(9), 1707-1712.

Young, L. E., Schumm, P., Alon, L., Bouris, A., Ferreira, M., Hill, B., ... & Schneider, J. A. (2018). PrEP Chicago: A randomized controlled peer change agent intervention to promote the adoption of pre-exposure prophylaxis for HIV prevention among young Black men who have sex with men. Clinical Trials, 15(1), 44-52.

Zarwell, M., Ransome, Y., Barak, N., Gruber, D., & Robinson, W. T. (2019). PrEP indicators, social capital and social group memberships among gay, bisexual and other men who have sex with men. Culture, Health & Sexuality, 1-18.

Zarwell, M., & Robinson, W. T. (2019). Network Properties Among Gay, Bisexual and Other Men Who Have Sex with Men Vary by Race. AIDS and Behavior, 1-11.

Zuckerman, E. W., & Jost, J. T. (2001). What makes you think you're so popular? Self-evaluation maintenance and the subjective side of the" friendship paradox". Social Psychology Quarterly, 207-223.