The HIV epidemic remains one of the most significant public health issues in the United States, particularly among men who have sex with men (MSM). New avenues for partner-seeking have emerged over the past three decades, including through the Internet, social media, and geosocial networking applications. Consisting of three cross-sectional studies, this dissertation research aimed to determine associations between the use of various online tools for partner-seeking (hereafter collectively referred to as “apps”) and HIV-related sexual behaviors among 252 young adult MSM residing in small/midsized towns or rural areas in Central Kentucky, a group that has been under-represented in the literature to date on this topic.

Most participants (181, 72%) reported app use for partner-seeking. Using multivariable logistic regression models, the first study revealed associations of online partner-seeking with decreased condomless insertive and receptive anal intercourse. App use, however, was also associated with increased number of insertive and receptive anal sex partners, alcohol/drug use before or during sex, and rectal douching among partners of MSM with higher education. Findings of the second study indicated that HIV-related sexual behaviors varied by the type of apps used for partner-seeking. Latent class analysis identified four subgroups of MSM by app use patterns: (1) a class who almost exclusively used Grindr and Tinder (Grindr/Tinder class); (2) a class with higher probabilities of using multiple MSM-oriented apps (Poly App Use class); (3) a class with higher probabilities of using general social media such as Facebook, Craigslist, Twitter, and Backpage (General Social Media class), and (4) a class with the highest probability of reporting using Bumble (Bumble class). Adjusting for other covariates, members of the Poly App Use class were more likely to be older, to report any illicit drug use in the past six months, and PrEP use in the lifetime, compared to MSM in other classes. Worth noting that in the unadjusted analyses, the number of receptive anal sex partners, percentages of condomless receptive anal sex, engagement in group sex, lifetime history of STI diagnosis, and reporting sex with HIV-positive individuals in the lifetime were significantly higher among members of the Poly App Use class than other classes. In the third study, dyadic analysis using multivariable generalized linear mixed effects modeling revealed no clear differences in reporting recent (past six months) condomless anal sex (CAS) – a sexual behavior that can increase risk for HIV transmission – by MSM who met sex partners on apps (i.e., “app facilitated” relationships), compared to their counterparts who met partners elsewhere. Engagement in CAS did not differ significantly between app-facilitated and non-app-facilitated relationships. Increasing age of partners (especially within non-app-facilitated relationships); White, non-Hispanic race/ethnicity of respondents; maintaining daily communication with partners; and respondents’ lifetime history of sex with HIV-positive individuals were associated with higher odds of CAS.

This dissertation reveals novel insights into the nuances of app use among MSM residing in small/midsized towns or rural areas in Kentucky. Although app use was associated with some risk behaviors (i.e., substance use before/during sex, increased number of partners), it was not associated at the individual- or relationship-level with condomless sex, the sexual behavior most relevant to HIV transmission. Study participants who used multiple MSM-oriented apps to meet partners had an elevated risk
profile, but there were no significant differences in sexual risk behaviors after adjustment for other factors. These findings highlight the need for future research to consider nuances of which apps are being used and to consider how sexual risk behaviors can vary by different app use patterns. Furthermore, our results underscore the need for HIV outreach organizations to continue using multiple strategies for HIV prevention that include dissemination of sexual health-related information not only via apps, but also via conventional venue outreach (e.g., at LGBTQ-friendly bars, social organizations) to increase testing, promote condom use and PrEP uptake to help stem HIV epidemic.

Key Words: Men who have sex with men (MSM); HIV; Sexual risk behaviors; Social networking applications; Latent Class Analysis; Dyadic Analysis of App-facilitated Relationships.