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An Investigation of Public Injection Drug Use in New York City: A Mixed-Methods Study

Taeko M. Frost
CUNY School of Public Health, taekofrost@gmail.com

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AN INVESTIGATION OF PUBLIC INJECTION DRUG USE IN NEW YORK CITY:
A MIXED-METHODS STUDY

A DISSERTATION

By

TAEKO M. FROST

Concentration: HEALTH POLICY & MANAGEMENT

Presented to the Faculty at the Graduate School of Public Health and Health Policy in partial fulfillment of the requirements for the degree of Doctor of Public Health

Graduate School of Public Health and Health Policy
City University of New York
New York, New York
MAY 2017

Dissertation Committee:

NANCY SOHLER, PhD
ELIZABETH EASTWOOD, PhD
CHRISTINA ZARCADOOOLAS, PhD
CHINAZO CUNNINGHAM, MD
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ABSTRACT

An Investigation of Public Injection Drug Use in New York City: A Mixed-Methods Study

By

Taeko Frost

Advisor: Nancy Sohler, PhD

Background: Drug use and injection-related harms are on the rise in the United States (US). As a result, new outbreaks of HIV and viral hepatitis C (HCV) attributed to injection drug use have been identified across the country. In addition to HIV and HCV, skin and soft tissue infection (SSTIs) that result from risky injection practices lead to preventable and costly emergency department (ED) visits. The concurrent opioid overdose epidemic has prompted a national conversation on how to effectively address drug-related harms and associated costs. International studies have identified that the place a person injects is related to adverse health outcomes; public injection drug use is associated with risky injection practices and other health harms. To minimize public injection drug use, eleven countries have implement supervised injection facilities (SIFs) to prevent both injection-related infections and opioid overdose. Despite over 30 years of operation and 100 sites in operation around the world, the US has yet to implement a government-sanctioned SIF. No studies in the US have investigated public injection drug use and the possible association between public injection drug use and health risks.

Objectives: To describe the prevalence of public injection drug use and associated risks among people who inject drugs (PWID) enrolled in syringe exchange programs (SEPs) in New York City (NYC) using a mixed-methods multi-phase study design including cross-sectional survey data and qualitative data derived from focus group sessions.
Methods: First, I used a grounded theory approach to create a definition of public injection drug through focus group sessions. I applied the PWID-informed definition of public injection drug use to operationalize and define public injection in the survey data. Then, I described where PWID inject drugs in NYC and the prevalence of public injection drug use using survey data from the Injection Drug User Health Alliance Citywide Study (IDUCS) from Wave 2 and Wave 3. Next, I measured the association between public injection drug use and receptive sharing of injecting equipment as a proxy for HIV and HCV transmission risk using bivariate and multivariate logistic regression analyses. Then, I analyzed data from the focus groups identify characteristics of the physical and social environment where PWID inject and how they may be related to risk. Based on these findings, I selected variables to include in logistic regression models to describe socio-demographic characteristics and risk behavior associated with public injection drug use. Lastly, I describe the experience of public injection drug use, the relationship of place to risk, management of health and social risks, and initial attitudes towards SIFs.

Results: A total of 820 participants were included in the quantitative analyses and 33 participants included in the focus group sessions. PWID reported that what makes a place public included four components: (a) physical features of a space that supported privacy, (b) sense of control over the space, (c) trust in the people in the space, and (d) exposure to being seen or arrested. Nearly two-thirds (64%) of PWID in the IDUCS study reported public injection drug in the three months preceding the IDUCS survey. The most frequently reported sites of injection drug use included one’s own home (71%), home of a friend or family member (59%), public bathroom (48%), or the street or park (38%). Public injectors are significantly more likely to report receptive sharing of injecting equipment (AOR=1.66, CI: 1.04-2.65). Public injection drug use was significantly associated with unstable housing (AOR=5.04, CI: 3.46-7.34), under 40 years of
age (AOR=2.02, CI:1.40-3.13), past 30-day heroin use (AOR=1.99, CI:1.27-3.13), past 30-day cocaine use (AOR=1.52, CI: 1.06-2.12), past year overdose (AOR=1.66, CI: 1.17-2.36), and witnessing an overdose (AOR=1.45, CI: 1.03-2.06). In the unadjusted model, public injectors were significantly more likely to report past year ED admission (OR=1.50, CI: 1.11-2.02) and less likely to have a primary care provider (PCP) (OR=0.37, CI: .23-.59) compared with non-public injectors. Participants described fear of arrest and accidental overdose as predominant factors taken into consideration when identifying a place to inject drugs; other factors included level of withdrawal, fear of violence, and being seen by others (friends/family/public). Participants described complex strategies to manage risk and the impact of hiding or rushing injection on their ability to apply safe injection practices. The place that was perceived as the ‘safest’ place to inject drug was in the SEP bathrooms; sterile injecting equipment and disposal was readily available, it is private enough to take their time and not worry about arrest but public enough that a staff member of a SEP could administer naloxone in the event of an overdose. In all focus group sessions, the response to SIFs was overwhelmingly positive; PWID believed that a SIF would enable them to practice safe injection and that other PWID would use it.

Conclusions: PWID are injecting in a variety of public places in NYC. Public injection is associated with risky injection practices and, in turn, potential transmission of HIV and HCV. PWID described that injecting in public increased their risk of being arrested or rushing injections, but was a safer option to prevent fatal overdose. The calculated risks and trade offs (i.e. risking arrest by injecting in public versus fatal overdose if injecting alone) were believed to impede one’s ability to practice safe injection techniques. SEP bathrooms are operating as pseudo-SIFs but remain unsanctioned and unsupervised. SIFs are one strategy to minimize injection related harm and overdose and this study provide initial insight into their potential
acceptability among PWID. However, strategies to address drug-related harm must also incorporate housing, healthcare, and drug policy reform.
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First, I would like to thank all of the participants who were courageous and generous with their time for both the IDUCS survey and focus group sessions. Particularly for the people I have lost over the course of my work in harm reduction, I dedicate this research to you.

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And to New York City, the best city in the world.
Disclosure Statement

Contributors

This manuscript is the authors’ original work, and has not received publication, nor is it under consideration for any other publication. Ms. Frost led the study as partial fulfillment for a doctoral degree in public health at the City University of New York (CUNY) School of Public Health. The dissertation committee members contributed feedback on various drafts of each section of the dissertation.

Conflicts of interest

None declared.
# TABLE OF CONTENTS

TABLE OF CONTENTS.................................................................................................................................................. x

List of Tables ................................................................................................................................................................ 1

List of Figures .............................................................................................................................................................. 2

Chapter 1: Introduction.................................................................................................................................................. 3

1.1 Illicit drug use in the United States (US) .............................................................................................................. 3

1.1.1 US Drug Use Trends & Impact on the Health Care System ................................................................. 3

1.1.2 Initiation into Injection Drug Use ............................................................................................................. 4

1.2 Injection Drug Use................................................................................................................................................ 5

1.2.1 Overview .................................................................................................................................................. 5

1.2.2 Blood-borne infections ........................................................................................................................ 6

1.2.3 Opioid Overdose .................................................................................................................................. 10

1.2.4 Social Risks ......................................................................................................................................... 11

1.2.5 Community Risks ................................................................................................................................ 11

1.3 Approaches to minimizing risk for PWID ...................................................................................................... 12

1.3.1 US Approach to Drug Use ................................................................................................................... 12

1.3.2 Harm Reduction Approach ................................................................................................................ 14

1.3.3 Harm Reduction Interventions ......................................................................................................... 16

1.4 Current Literature & Gaps ............................................................................................................................. 20

1.5 Contribution to the literature .......................................................................................................................... 21

1.6 Purpose of the dissertation ................................................................................................................................ 22

1.7 Study Design & Sources of Data ..................................................................................................................... 23

1.7.1 Overview ............................................................................................................................................... 23

1.7.2 Overview of IDUCS Parent Study ........................................................................................................ 23

1.7.3 Current Study ........................................................................................................................................ 28

1.7.4 Qualitative sub-study – focus group sessions ...................................................................................... 28

1.7.5 Focus group sessions ........................................................................................................................... 29

1.7.6 Focus group analysis ............................................................................................................................ 29

1.8 Analytical Approach .......................................................................................................................................... 30

1.8.1 Overview ............................................................................................................................................... 30

1.8.2 Qualitative Informs Quantitative ........................................................................................................ 32

1.8.3 Quantitative Informs Qualitative ....................................................................................................... 32

1.9 Organization of the Dissertation ...................................................................................................................... 33

1.10 Specific Aims .................................................................................................................................................... 34

Aim 1: ............................................................................................................................................................. 34

Aim 2: .......................................................................................................................................................... 35

Aim 3: .......................................................................................................................................................... 35

Chapter 2: Public injection drug use and risk: an observational study of people who inject drugs in New York City......................................................................................................................... 37

2.1 Introduction ...................................................................................................................................................... 37

2.2 Methods .......................................................................................................................................................... 40

2.2.1 Overview of the Parent Study ............................................................................................................. 41

2.2.3 Current Study ...................................................................................................................................... 42

2.2.4 Measures .............................................................................................................................................. 42

2.2.5 Statistical Methods ............................................................................................................................ 44

2.3 Results .......................................................................................................................................................... 44

2.3.1 Sample Characteristics ........................................................................................................................ 44
Chapter 5: Discussion .............................................................................................................. 116
5.1 Overview of the Dissertation ..................................................................................... 116
5.2 Summary of the Findings ......................................................................................... 120
  5.2.1 Chapter 2 .................................................................................................................. 120
  5.2.2 Chapter 3 .................................................................................................................. 122
  5.2.3 Chapter 4 .................................................................................................................. 124
5.3 Policy Recommendations ........................................................................................... 126
  5.3.1 Recommendation #1 .............................................................................................. 127
  5.3.2 Recommendation #2 .............................................................................................. 131
  5.3.3 Recommendation #3 .............................................................................................. 134
  5.3.4 Recommendation #4 .............................................................................................. 136
  5.3.5 Recommendation #5 .............................................................................................. 138
  5.3.6 Recommendation #6 .............................................................................................. 141
  5.3.7 Recommendation #7 .............................................................................................. 143
  5.3.8 Recommendation #8 .............................................................................................. 144
5.4 Study Strengths ............................................................................................................ 148
5.5 Limitations .................................................................................................................... 150
5.6 Future Research Directions ....................................................................................... 154

List of Appendices ............................................................................................................. 156
  Appendix A – Map of IDUHA Study Sites (June 2015 - Phase 3) .................................. 157
  Appendix B – IDUCS Survey Domains Overview ......................................................... 158
  Appendix C – IDUCS Survey Instrument ....................................................................... 159
  Appendix D – IDUCS Field Interviewer Training Topics .............................................. 176
  Appendix E – Dissertation Variable Table by IDUCS Domain ..................................... 178
  Appendix F – Original IDUCS Variables – Table of Missing Variables ...................... 180
  Appendix H – IDUCS Group Comparisons (Wave 2 vs. Wave 3) ................................. 191
  Appendix I – Focus Group Facilitator Guide ................................................................. 192
  Appendix J – Focus Group Screening Form for Eligibility ............................................ 195
  Appendix K – Focus Group Consent Form ..................................................................... 196
  Appendix L – Focus Group Survey Instrument .............................................................. 201

References .......................................................................................................................... 206
List of Tables

Table 2A Socio-demographic and behavioral factors association with receptive sharing of injecting equipment in the past 3 months among PWID (n=787)

Table 2B. Factors associated with receptive sharing of injecting equipment in the past three months among PWIDs in NYC using a multivariate logistic regression model (n=787)

Table 3A. Sample characteristics and a comparison of participants reporting public injection drug use among PWID in the IDUCS survey (n=755)

Table 3B. Bivariate associations between participant characteristics and public injection drug use among PWID in the IDUCS (N=755)

Table 4A. Socio-demographic and risk behavior characteristics of PWID who participated in focus group sessions (N=33)

Table 4B. Places of Injection Drug Use by Most Frequent Location and Ever in Past 3 Months (n=33)

Table 4C. Drug Use by Type and Frequency for PWIDS (n=33)
List of Figures

Figure 1A. IDUCS – Participant recruitment by survey wave

Figure 1B. Study Design Flow Chart

Figure 3A. Key Themes and Sample Excerpts Related to Public Injection versus Private Injection Drug Use

Figure 4A. Potential for SIFS to reduce risk and perceived benefits
Chapter 1: Introduction

1.1 Illicit drug use in the United States (US)

One in ten Americans over the age of 12 years-old report using an illicit drug in the past 30 days.\(^1\) Illicit drugs include marijuana, crack/cocaine, heroin, hallucinogens, inhalants, methamphetamine, and the non-medical use of prescription opioids, stimulants, and sedatives. The United States (US) has seen a steady increase in the reported use of illicit drugs in recent years, from 24.6 million in 2014\(^2\) to 27.1 million individuals in 2015\(^1\), representing a 10% increase. Over 20 million people report they had a substance use disorder (SUD) in the past year, including 7.7 million who reported illicit drug use disorder.\(^3\) In 2015, 3.8 million people reported current misuse of prescription opioids and 329,000 people report the use heroin.\(^3\) The number of people who report the misuse of prescription opioids or heroin has significantly increased every year since since 2009.\(^1\) Addressing the consequences of drug use has developed into a topic of national conversation.

1.1.1 US Drug Use Trends & Impact on the Health Care System

There are several key demographic and behavioral risk trends related to the misuse of prescription opioids (e.g. “pain killers” such as hydrocodone) and heroin. First, prescription opioid misuse is highest among young adults (18-25 years of age), with 2.4% of young adults reporting misuse in the past 30 days.\(^3\) This is twice the rate of any other age group. In 2014, there were a record-breaking 28,000 opioid overdose deaths in the US.\(^4\) Deaths due to heroin use have tripled since 2010.\(^5\) Emergency department visits involving the misuse of prescription opioids increased by 153% between 2004 and 2010.\(^6\) Similarly, the use of substance use treatment programs due to prescription opioids misuse has increased four fold since 2002.\(^7\) However, there
are significant disparities in access and use of drug treatment among young adults for non-medical use of prescription opioids; Black and Latino people who use drugs, particularly with a history of incarceration, were significantly less likely to access substance use treatment services.\textsuperscript{8}

In addition to the cost of lost lives, the opioid epidemic has serious financial implications. The economic burden of the opioid epidemic has grown from $8.1 billion in 2001\textsuperscript{9} to $78.1 billion in 2015.\textsuperscript{10} Since the establishment of the Affordable Care Act (ACA), a shift to pay-for-performance versus fee-for-service holds providers accountable for improving quality and care of patients in order to reduce cost.\textsuperscript{11} In New York and several other Medicaid expansion states, initiatives to reduce costs by reducing preventable ED admissions have been prioritized.\textsuperscript{12} At least 2.5 million ED visits involve the use of an illicit drug and admissions due to opioid overdose have steadily increased since 2006.\textsuperscript{6} Furthermore, admissions due to injection-related infections result in longer and more costly hospital stays.\textsuperscript{13,14} It is more critical than ever to identify strategies to effectively address the opioid epidemic to save resources and lives.

\textbf{1.1.2 Initiation into Injection Drug Use}

Incidentally, efforts to minimize access to prescription opioids to prevent non-medical use may have contributed to a new cohort of PWID.\textsuperscript{15,16} Prescription drug monitoring programs (PDMPs)\textsuperscript{15} have been implemented as a state-level intervention to monitor and prevent the misuse of prescription opioids. PDMPs capture dispensing patterns submitted by pharmacists in order to provide medical providers with a snapshot of what prescriptions have been filled by their patients. The intention of these monitoring tools was to limit overprescribing and, in turn, reduce the number of prescription opioids available in the community that contribute to opioid overdose. The programs have been successful in minimizing over-prescribing and identifying patients with multiple prescriptions, but have not had an effect on preventing overdose events.
Studies have shown that the one reason for recent increases in injection drug use has been due to the increased use of heroin after prescription opioids were not as readily available.\textsuperscript{17} The incidence of heroin initiation was nine times higher among people who reported non-medical use of prescription opioids compared with those who did not report the use of non-medical use of prescription opioids.\textsuperscript{18} Individuals who were addicted to prescription opioids were left with a need for opioids; heroin is is cheaper than street-purchased prescription opioids\textsuperscript{19,20} and access to prescription opioids was limited due to drug monitoring programs\textsuperscript{15,21} In addition to risks associated with illicit drug use, the transition to using heroin may increase initiation into intravenous (IV) drug use.\textsuperscript{22,23} Given the steady increases in prescription opioid use and trends in transition to IV heroin use, understanding health risks associated with IV drug use is essential

1.2 Injection Drug Use

1.2.1 Overview

In 2014, there are approximately 774,434 people in the US who reported injecting drugs in the past year, representing approximately 0.3\% of the population.\textsuperscript{24} According to the National HIV Behavioral Surveillance (NHBS)\textsuperscript{25} study among people who inject drugs (PWID), the majority are male (71.5\%), over the age of 40 years old (71\%), and non-white (68.1\%).\textsuperscript{26} Over half PWID report that they have obtained a high school diploma or equivalent (66.5\%) and nearly three-quarters (77.8\%) receive an annual income at or below the federal poverty line. Over half have some form of health insurance (59.1\%). PWID face a disproportionate level of risk compared to non-injectors, such as blood-borne infections\textsuperscript{27–32}, overdose\textsuperscript{33,34}, arrest\textsuperscript{35–37}, and homelessness.\textsuperscript{38–40}
1.2.2 Blood-borne infections

National increases in drug use correspond with increased viral hepatitis C (HCV) incidence.\textsuperscript{5} Data on PWID in research is often in the context of blood-borne infections; primarily HIV and HCV. In the US, PWID comprise 22\% of people who are living with HIV infection and 48\% of people who report living with HCV.\textsuperscript{32,41} The mechanisms of risk for HIV and HCV include reusing injecting equipment that a person who is HIV or HCV positive already used, referred to as ‘receptive sharing’. Injecting equipment may include a syringe, a receptacle for drugs referred to as a “cooker”, water used for drug disintegration, and cotton filters. Sharing any injecting equipment with an individual who is infected with HIV or HCV generates risk of transmission\textsuperscript{42}. Sharing syringes is the highest and most studied risk for HIV and HCV transmission, followed by sharing cookers and cotton filters.\textsuperscript{43} Individual socio-demographic and health factors associated with sharing injecting equipment include female gender\textsuperscript{44,45}, younger age\textsuperscript{46}, homelessness\textsuperscript{47}, and a recent positive HCV test\textsuperscript{48}. Drug use characteristics associated with sharing injecting equipment include the number of injection episodes per day\textsuperscript{49}, any methamphetamine use\textsuperscript{50}, and cocaine as the primary drug of choice for injection\textsuperscript{51}. Social factors associated with sharing injecting equipment include having a concordant HCV status with an injecting partner\textsuperscript{52}, and a close relationship\textsuperscript{53} and trust\textsuperscript{54} in the individual with whom they are injecting. Individuals in romantic relationships are also more likely to report sharing injecting equipment.\textsuperscript{55} Next, I describe the three common injection-related infections and the cost of treatment.
1.2.2.1 HIV/AIDS

There are approximately 1.2 million people living with HIV in the US; approximately 13% are unaware of their status\textsuperscript{56}. In 2014, there were 44,073 people diagnosed with HIV in the US.\textsuperscript{57} HIV disproportionately affects young people ages 13 to 24, representing 16% of the population but accounting for 22% of all new HIV diagnoses.\textsuperscript{57} There is no vaccine for HIV but there are effective treatment options, including anti-retroviral therapy (ARV). The Ryan White HIV/AIDS Drug Assistance Program (ADAP) and the extension in 2009 (Public Law 111-87) has supported low-income individuals with HIV to receive treatment and other supportive services, including supportive housing and wrap-around services (i.e. nutritional workshops, support groups, mental health, dental) to engage and retain individuals in care. In 2016, the governor of New York committed to a vision to end the AIDS epidemic by the year 2020.\textsuperscript{58} The plan focuses on (a) early detection by identifying new cases of HIV, (b) connect newly infected individuals to care and treatment, and (c) promote pre-exposure prophylaxis (PrEP) for high-risk individuals (e.g. PWID) in order to keep them from contracting HIV. The latter is an up front investment to prevent long-term costs associated with HIV (lifetime cost approximately $379,000\textsuperscript{59}). In 2014, PrEP initiatives and funding were integrated into syringe exchange program (SEPs) for PWID. In the subsequent sections of this chapter, I describe initiatives and health policies that have promoted HIV prevention among PWID.

1.2.2.2 Viral Hepatitis C

The burden of HCV is even larger compared to HIV. HCV causes liver disease and is transmitted through blood only. Injection drug use is the most common pathway for infection\textsuperscript{41}. There are an estimated 3.2 million people living with HCV in the US.\textsuperscript{60} Of those people, 2.7 million have
chronic infection. In 2014, there were an estimate 30,500 new infections in the US.\textsuperscript{60} The incidence rate of HCV has more than doubled nationwide since 2010\textsuperscript{41} and deaths associated with HCV have outnumbered deaths from HIV since 2007. In recent years, state-level surveillance reports indicate increases in HCV infection attributed to injection drug use.\textsuperscript{61,62} In four states in Appalachia, the number of cases of acute HCV infection among persons under 30 years of age increased by 364% between 2006 and 2012.\textsuperscript{2,63} Similar patterns have been identified in other states\textsuperscript{64,65}, including New York\textsuperscript{66,67}. Similar to the national sample, rates of HIV attributed to injection drug use have decreased over the years while HCV has increased, particularly in suburban and rural areas.\textsuperscript{68} Considering that more people die from hepatitis than all other infectious diseases combined, prevention and treatment initiatives have not been met with the same success as those for HIV/AIDS.\textsuperscript{69} While the lifetime cost of treating HCV is lower compared with HIV (~$64,490, depending on genotype\textsuperscript{70}) and new non-interferon based treatments have been developed\textsuperscript{71}, barriers to treatment still exist. Early HCV interferon-based treatments were painful and met with adverse side effects; PWID who were treated or knew friends who were treated with interferon are hesitant to initiate new treatments.\textsuperscript{72,73} Furthermore, HCV rapid testing and antibody tests were only recently accessible in community-based settings, and still required a full-blood draw for confirmatory testing. A recent study found that nearly three-quarters (72\%) of individuals who tested positive for a confirmatory test said they were unsure of treatment options.\textsuperscript{74} In 2016, the National Academies of Sciences, Engineering, and Medicine announced a vision for eliminating hepatitis B and C by 2030, which include similar strategies to the End AIDS by 2020 blueprint. However, in order to implement testing and treatment recommendations, state-level legislation and advocacy will be required. Age restrictions on testing and parental consent for treatment, authorization of prevention efforts
including syringe exchange programs (SEPs), and coverage of treatment vary significantly by state. A national vision to end the epidemic will require a combination of federal mandates, federal funding, and community education to garner support for the implementation of prevention and treatment initiatives.

1.2.2.3 Skin and Soft Tissue Infections (SSTIs)

PWID are at increased risk of skin and soft-tissue infections (SSTIs). There is a wide variation in the number of PWID who will experience SSTI in their lifetime (6%-69%)\textsuperscript{75} but the results can be costly and fatal. SSTI can be caused by inadequate cleaning and care of the injection site prior to or after injection,\textsuperscript{76,77} repeated injection or missing veins,\textsuperscript{78} habitual practices such as licking a needle prior to injection,\textsuperscript{77} frequent daily injections and injection of non-powder drugs,\textsuperscript{77} and the sharing of injecting equipment.\textsuperscript{55} SSTI may develop into infective endocarditis, sepsis, thrombosis, embolism, or bone and joint infections.\textsuperscript{28,75} PWID may avoid the ED attempt to manage to self-manage SSTI and associated wounds, including some behaviors that were determined to be potentially more harmful.\textsuperscript{79} One study found that abscesses, cellulitis, and other SSTI accounted for the largest proportion of reasons that PWID accessed the emergency department (ED).\textsuperscript{80} Injection-related infections are costly to the PWID and to society. A recent study of just one public hospital found that the cost of treatment due to injection-related infection (i.e. endocarditis, bacteremia, sepsis, osteomyelitis, and other SSTIs) was $11.4 million in one year.\textsuperscript{13} Another study found that SSTIs tended to result in longer and more costly hospital stays, with an average overall cost of $4,449 per admission.\textsuperscript{14} Prioritizing the prevention of SSTIs can save healthcare spending and lives.
1.2.3 Opioid Overdose

PWID who inject or ingest opioids are at risk of opioid overdose. Studies of PWID have found that factors associated with non-fatal overdose include the use of a stimulant in addition to opioids, \(^{81}\) poly-substance use, \(^{82}\) requiring assistance with injection, \(^{81}\) depression, \(^{83}\) and low tolerance due to recent incarceration \(^{84}\) or enrollment in drug treatment. \(^{85}\) Factors that are protective against non-fatal overdose include receiving methadone maintenance treatment (MMT). \(^{86}\) Non-fatal overdose may have other consequences for PWID, including potential seizures, physical injuries sustained when falling during the overdose, burns, assault while unconscious, and temporary paralysis. \(^{87}\) Further, non-fatal overdose is a risk factor for a subsequent fatal overdose. \(^{88}\) In 2011, accidental opioid overdose was the leading cause of accidental death among adults. Since that time, a series of health policies have been introduced to prevent overdose. As mentioned earlier in this chapter, prescription drug monitoring programs (PDMPs) were introduced to prevent over-prescribing. Several states have adopted 911 Good Samaritan Laws \(^{89,90}\) which encourage any bystander to call 911 to respond in the event of an overdose without fear of being arrested for possession. Overdose prevention training and naloxone distribution have been implemented in a variety of community settings, including with law enforcement. State and city-funded naloxone initiatives expanded community-based organization capacity to dispense naloxone. In 2015, a standing order was approved by New York State (NYS Public Health Law 3302 Section 80.138) to permit lay healthcare workers to distribute naloxone without a written prescription. Emergency departments are piloting co-prescribing of naloxone for individuals who have been admitted for overdose, including prescriptions for family members and friends. \(^{91}\) The expansion of overdose prevention initiatives to prevent fatal overdose from occurring have been widespread, but they are limited to
preventing fatal overdose and not necessarily the practices or situation that may lead to overdose to begin with.

Injection-related infections and overdose cost lives. In addition to these risks, PWID also experience risks that aren’t directly related to health but may impact their wellness.

1.2.4 Social Risks

In addition to blood-borne infections, SSTIs, and overdose, PWID are also more likely to experience adverse social outcomes. PWID experience high rates of arrest and incarceration, homelessness, and experiences of stigma. PWID may be arrested due to public drug use or possession of injecting equipment, which is directly associated with receptive sharing of injecting equipment. If a PWID is in the process of obtaining housing or in a transitional housing unit, incarceration may repeatedly impact their ability to maintain stable housing and result in recurrent homelessness. Experiences of stigma from community members, family, and social services providers are common and contribute to PWID exclusion and, in turn, self-destructive health behaviors. The role of social consequences of injection drug use impact risk behavior and wellness.

1.2.5 Community Risks

Aside from the costs due to injection-related infections and lives lost to overdose, there are several ways in which injection drug use impacts communities. First, PWID who fear arrest of syringe possession may improperly discard syringes in the community, including in parks or garbage cans. The impact may be accidental needle stick and subsequent infection of anyone who comes into contact with an improperly discarded syringe. Second, PWID may inject in
public restrooms and leave behind injection-related paraphernalia. Third, the purchasing and selling of drugs near an area where PWID use drugs may result in drug use in public view. Injection drug use poses considerable health and social risks to PWID and the communities in which they live. In the next section, I will describe strategies that have been implemented to reduce harm associated with injection drug use among PWID.

1.3 Approaches to minimizing risk for PWID

1.3.1 US Approach to Drug Use

The US spends over $51 billion per year on what is known as the war on drugs. In 1971, President Nixon declared a War on Drugs which aimed to fund drug control agencies and law enforcement to arrest and imprison anyone involved in the procurement, distribution, and use of illicit drugs. In the late 1970s, there were several attempts to decriminalize marijuana possession in at least eleven states but were later abandoned. By the 1980s, President Ronald Reagan continued the zero-tolerance approach to drugs and funded anti-drug education programs, including the DARE education program and ‘Just Say No’ campaign. By the end of the decade, 64% of US citizens reported that drug use was the country’s top concern compared to 2% to 6% in the beginning of the decade. This shift to the criminalization and abstinence-only approaches to drug use resulted in an 800% increase in rates of incarceration and further establishment of abstinence-based approaches to drug use.

Over forty years later, the US is facing record-breaking numbers of overdose deaths and new outbreaks of HIV and HCV. The US represents 5% of the world population but accounts for 25% of people in prison. Healthcare spending on substance use exceeds $78 billion per year. The
war on drugs has not resulted in decreased drug use. Over the past fifteen years, the tide has shifted to reconsider approaches to drug use. In 2011, the Office of National Drug Control Policy (ONDCP) recommended wide distribution of naloxone after it was reported as the leading cause of accidental death in the US among young adults. Syringe exchange programs (SEPs) have demonstrated efficacy in drastically reducing the number of new HIV cases attributed to injection drug use and have been established in 42 states since 1990. In 2016, the federal ban on syringe exchange funding was lifted, providing additional financial support to syringe exchange programs. Developments in medication assisted treatment (MAT) including buprenorphine has been expanded, reducing case load restrictions and expanding provider prescribing to nurse practitioners and physician assistants. Several cities around the country are piloting Law Enforcement Assisted Diversion (LEAD) programs, referring people who use drugs to support services instead of jail. The ACA expanded Medicaid services in select states and moved from a fee-for-service environment to a pay-for-performance model, increasing accountability for health care providers to provide high quality care. In 2016, the Obama administration signed the Comprehensive Addiction and Recovery Act (CARA), which authorized $181 million per year to develop a comprehensive effort to address the opioid epidemic. The approach includes six pillars for coordinated response; prevention, treatment, recovery, law enforcement, criminal justice reform, and overdose reversal. The tide has been slowly shifting to incorporate evidence-based interventions that offer options for people who use drugs, including options for people who are not readily or willing to enter treatment.

However, the future of many of the programs that cover services for people who use drugs is uncertain. The Trump administration ran a campaign on the premise that it would repeal and
replace the ACA. This was attempted and failed in March 2017, but may be reintroduced. The
repeal of the ACA and replacement with the American Health Care Act (ACHA) and proposed
block grants would restrict access to Medicaid and Medicare; public insurance covers or
subsidizes services for people who use drugs including, but not limited to, HCV testing and
treatment, HIV testing and treatment, MMT, MAT, and routine primary care, outpatient mental
health services. In addition to potential health service cuts, the public health research that
evaluates and guides public health interventions are under threat. The Trump administration
proposed a 20% cut ($5.8 billion) to the National Institute of Health (NIH) and has alluded to
reforms in the Centers for Disease Control (CDC) budget. In short, services for people who use
drugs may again be limited or unavailable. However, one positive proposal by the administration
is an additional $500 million designated to the Department of Health and Human Services
(DHHS) to expand services to prevent overdose and increase access to drug treatment. However,
the specifics on how those funds are designated is unclear.

Many strategies to address the risks associated with illicit drug use may focus on reducing risk
by eliminating drug use entirely. Based on recent increases in illicit drug use and costs described
earlier in this chapter, I believe that strategies must acknowledge and accept that drug use is part
of our society and requires an approach that offers options to people in various stages of drug
use. Therefore, in this dissertation research I focus on interventions that address risk by
providing resources and education to make drug use safer.

1.3.2 Harm Reduction Approach

Harm reduction is an approach to addressing health and social consequences of drug use. The
approach is centered around the respect for autonomy of PWID and with the primary goal of
reducing immediate health and social risk behaviors to promote wellness.\textsuperscript{119} Harm reduction acknowledges that drug use exists in our society and applies interventions that reduce the most immediate risk at that time for the person.\textsuperscript{120} The belief that any positive change, from reducing risky injection practices that may result in the transmission of a blood-borne infection to behavior change that reduces the likelihood of being arrested, is in unto itself a success. Many harm reduction strategies integrate the trans-theoretical model of behavior change, also known as the Stages of Change\textsuperscript{121} model; this model suggests that individuals move through a series of stages in order to adopt health behaviors or minimize unhealthy ones.\textsuperscript{121} Techniques such as motivational interviewing\textsuperscript{122,123} are applied to facilitated movement between the stages of change to address self-identified risk behaviors that have negative health, social, or emotional impacts. Harm reduction is not in opposition to abstinence-based programs; it fits on a spectrum of addressing drug use for people who are currently using while maintaining that if a persons goal is abstinence that they are provided support to achieve abstinence. In addition to promoting individual behavior change, harm reduction is also a social movement to address practices and policy that are potentially harmful or hinder health and social wellness of PWID. Some examples of harm reduction driven practices and policies include Housing First models, community distribution of naloxone, and Law Enforcement Assisted Diversion (LEAD)\textsuperscript{118}. Housing First models prioritize housing for individuals with serious mental health and/or substance use disorders as a pathway to addressing other risk behaviors; it has been demonstrated to be cost-effective at improving access to medical and mental health services.\textsuperscript{124-126} Community distribution of naloxone, an opioid overdose antidote that can be administered by injection or nasal spray, reduces overdose by educating community members on signs of overdose and making naloxone widely available. Naloxone distribution has been promoted among PWID,
family and friends of PWID, social service providers, and law enforcement as a cost-effective method of reducing mortality. LEAD programs address low-level drug and sex work crimes by redirecting potential offenders to community-based services instead of jail. These programs are currently in a pilot phased in select cities in the US but early evaluation indicates improvement in housing and employment stability for participants and potential cost-savings as an alternative to incarceration. Harm reduction is a valuable and effective framework for addressing high risk behavior of PWID and social policies that may impact their health and wellbeing.

1.3.3 Harm Reduction Interventions

Next, I describe three interventions that are specific to addressing injection-related harms. I discuss the approach, strengths, and limitations as it relates to the US. These three interventions include medication assisted treatment (MAT), syringe exchange programs (SEPs), and supervised injection facilities (SIFs). While these interventions may also address non-injection drug use risks, I will be focusing on the elements that address the issues specific to injection drug use outlined in the previous section of this chapter.

1.3.3.1 Medication Assisted Treatment (MAT)

MAT is an intervention designed to replace illicit opioids with legal, medically-administered opioids including methadone and buprenorphine. Methadone maintenance therapy (MMT) is designed to be provided in daily, monitored doses in conjunction with care coordination and medical treatment. Studies have shown that MMT reduces crime, injection-related risk behaviors, heroin use, and premature mortality. However, access and coverage of MMT may be limited in some states. While the number of MMT programs has remained consistent (~1,200 programs) in the US, the number of individuals accessing MMT has increased from 227,000 to
306,000. Fortunately, access to buprenorphine has increased in recent years. Buprenorphine is an opioid agonist that reduces symptoms of withdrawal among opioid users. Patients are provided a sub-lingual tablet that blocks both symptoms of withdrawal and any effects that would normally be experienced if using concurrent opioids. Unlike MMT, buprenorphine can be offered at either a MMT program or a primary care clinic setting and are provided in take-home doses. One preference for buprenorphine over methadone is the flexibility being able to self-administer similar to any other medication. While effective, similar to MMT, access to buprenorphine due to provider availability, provider willingness, stigma, or logistical barriers often remains a barrier to treatment. One way to address some of these barriers may be to integrate buprenorphine at SEPs, an environment where there are active PWID who may or may not have access to buprenorphine.

Recent changes in the Comprehensive Addiction Recovery Act (CARA 2016) expanded existing prescribing limitations to increase patient case loads and permit non-MD providers to prescribe buprenorphine. These changes may result in a scale up of access to buprenorphine and, in turn, reduce injection drug use.

1.3.3.2 Syringe Exchange Programs (SEPs)

Syringe exchange is a public health intervention designed to provide sterile injecting equipment for PWID to reduce the transmission of disease. While the concept started with exchanging syringes (i.e. provide one used syringe, receive one sterile syringe), most syringe exchange programs provide syringe distribution (i.e. receive as many syringes as requested) to minimize sharing of injecting equipment. The establishment of harm reduction as a public health approach in the United States was primarily conceived in response to the HIV/AIDS epidemic. In 1984, the first government sponsored syringe exchange program opened in Tacoma, WA, in response to the growing HIV incidence among injection drug users. In New
York, the first syringe exchange was established in May 1992. Since then, SEPs have been credited with substantially reducing HIV incidence among PWIDs\textsuperscript{6,4–67} as well as improving linkage to health care, drug treatment and other support for individuals who are poorly served by the health care system in NYC.\textsuperscript{145,146} Despite the research on the efficacy of these programs to prevent infections, syringe exchange programs do not exist in every state and access to syringes is limited. Federal funds for syringe exchange were banned until 2016\textsuperscript{147}, which exception of a brief overturn in 2010. In light of recent increases overdose rates, new cases of hepatitis C, and HIV outbreaks, several traditionally conservative states have declared public health emergencies and moved to implemented syringe exchange programs.\textsuperscript{63} Expanding syringe exchange is one pragmatic approach to reduce new infections and injection-related risk. However, participants of SEPs continue to report that they are fearful of carrying or returning syringes to the SEP due to potential arrest. In New York, the public health law and penal code permit participants of SEPs to carry hypodermic syringes if they are also in possession of a SEP enrollment card. However, carrying injecting equipment with residue may be a potential charge. Research has shown that the presence of police affect the ability of PWID to access sterile injecting equipment. As a result, SEPs are somewhat limited without further modification of the penal code and cooperation with law enforcement. SEPs are also limited to providing sterile injecting equipment \textit{before} an injection and do not address social and environmental factors where risk behavior is likely to occur.\textsuperscript{148} We know that social and environmental factors are an important piece of minimizing risk behavior. Next, I will discuss an intervention designed to provide both sterile injecting equipment and a safer environment for injection drug use to minimize risk.
1.3.3.3 Supervised Injection Facilities (SIFs)

Supervised injection facilities (SIFs) expand harm reduction tactics to consider the social environment. SIFs may also be referred to as Drug Consumption Rooms (DCRs) or Medically Supervised Injection Sites (MSIS). SIFs are facilities where PWID can self-inject using pre-obtained drugs in a hygienic environment under the supervision of trained medical staff. SIFs provide a space for individual to self-inject and are commonly integrated among other social services, including but not limited to access to healthcare, housing, entitlement, and drug treatment services. While there are varied models of SIFs, the common features include medical oversight and well-lit, hygienic spaces for individual to inject drugs. There are various eligibility requirements, ranging from a minimum time of participation in the program to level of drug consumption. The primary objective of this intervention is to reduce drug overdose deaths, soft-tissue infections, transmission of blood-borne pathogens, and community issues related to public injection. Public injection drug use, or injecting in a non-residential place, is associated with exacerbated injection-related health risks described earlier in this chapter. SIFs have been in operation for over 30 years, with the first site opening in Switzerland. Currently, there are over 100 SIFs operating in 66 cities in eleven countries around the world. There is only one SIF in North America; Insite, located in Vancouver, Canada. The research on SIFs is extensive. SIFs have been found to significantly reduce overdose mortality, HIV infections, hepatitis C infections, public drug use, and improperly discarded syringes in communities. They have accomplished this by reducing syringe and injecting equipment sharing and offering a supervised, hygienic environment to consume drugs safely. SIFs also increase access to other life saving services, such as drug treatment and housing placement. Contrary to popular belief, the presence of a SIF does not increase crime or public nuisance. PWIDs who access SIFs
report that injecting in a supervised setting reduces unsafe injection practices, including reusing equipment, and also protects against other concerns such as fear or arrest and overdose.\textsuperscript{166,167} PWID also report feeling less shame and stigma compared to injecting in a public setting.\textsuperscript{168,169} Aside from protection from health and social risks, SIFs are a cost-effective intervention. Multiple studies have indicated cost savings by averting new HIV infections alone, with Vancouver estimating a cost-savings of at least $6 million per year.\textsuperscript{170,171} Despite the overwhelming evidence that SIFs are a cost-effective, evidence-based approach to minimize injection-related risk among PWIDs and the communities they live in, the US has not adopted this intervention. In the next section of this chapter, I will discuss the importance of understanding place of injection drug use and how it is related to risk in the US.

1.4 Current Literature & Gaps

Research on public injection drug use or the potential cost-savings of SIFs in the US is limited. The first study on the relationship between place and injection-related risk behavior was conducted in a cohort of PWIDs in Baltimore in 1994; the main findings were that injecting at a friend’s residence or in a semi-public area was associated with sharing syringes and failure to disinfect syringes.\textsuperscript{172} The study does not include receptive sharing of injecting equipment beyond syringes and place are limited to four categories; own residence, friend’s residence, shooting gallery, and a “semipublic area”. Others articles have discussed the importance of place related to HIV risk or geo-spatial techniques for measuring where risk behavior occurs, but do not measure the association between place of use and sharing of injecting equipment.\textsuperscript{173–175} In 2009, the National HIV Behavioral Surveillance (NHBS) study of 514 PWID reported that approximately 30% injected drugs in a public place.\textsuperscript{176} While the NHBS collected data on place of drug use and sharing of injecting equipment, the types of locations are similarly limited and
no publications have been produced to date on this topic.\textsuperscript{25} Since that time, there have been several studies related to public injection drug use and SIFs in the US. One recent study found that 56\% of business owners surveyed in New York City (NYC) reported finding injection-related paraphernalia in their bathroom.\textsuperscript{106} Another recent study estimated that a single 13-booth SIF would save San Francisco $3.5 million per year in averted HIV cases alone.\textsuperscript{177} In a different survey of PWID at a SEP, 85\% indicated they would use a SIF if it were available in San Francisco.\textsuperscript{178} However, none of the studies report more specific details on prevalence or risks associated with public injection drug use. As mentioned earlier in this section, an important component in making the connection from SEPs to SIFs was the framing of public injection drug use as a public health issue. The purpose of this dissertation is to define and describe public injection drug use in NYC from the perspective of PWID, the association between public injection drug use and health risks, and the experience of PWID injecting in public places to contextualize both health and social risks.

1.5 Contribution to the literature

There is a new and developing national conversation about how to address the HCV and overdose epidemics that includes implementing SIFs. Some states, including New York, California, Massachusetts, Vermont, and Maryland have introduced legislation to support SIFs. In 2014, a coalition of social service providers to begin to discuss alternatives to public injection drug use was established. In 2015, the coalition launched a campaign for SIFs and advocated with NYC city council and the NYC Department of Health and Mental Hygiene (NYCDOHMH) for a feasibility study. In 2016, NYC city council allocated $100,000 to NYCDOHMH to conduct a feasibility study. In partnership with the New York Academy of Medicine (NYAM), the coalition secured an additional $100,000 for implementation following the feasibility study.
Meanwhile, the mayor of Seattle approved two SIFs to open by the end of 2017. In April 2017, San Francisco assembled a task force and introduced state legislation (CS AB 186) to permit counties to approve SIFs. Other local municipalities, including Baltimore MD, Ithaca NY, Portland OR, and Boston MA have discussed similar activities to implement SIFs. In Vancouver, one of the key elements of developing support for SIFs was a robust research initiative to identify prevalence of public injection drug use and associated adverse health and social consequences for the individual and the community of the Downtown East Side. While there was over 20 years of research in other countries that demonstrated the efficacy of SIFs, officials and community members request local statistics to justify both political and financial capital to implement these controversial programs. This dissertation is the first research to investigate public injection drug use and associated risks in NYC.

1.6 Purpose of the dissertation

This dissertation research will provide the rationale for moving beyond the provision of sterile injection equipment to SIFs by (a) describing patterns of where PWIDs are currently injecting drugs, (b) measuring the association between place and risk of HIV and HCV transmission (receptive sharing of injecting equipment), (c) describing factors associated with public injection drug use versus non-public injection drug use, (d) exploring experiences of injecting in difference places among PWIDs, and (e) describing initial attitudes towards SIFs among PWIDs.

The collection of research is both novel in topic and approach, since literature related to injection-risk and supervised injection facilities are primarily quantitative or qualitative. The findings are also timely and relevant to current discussion on drug use in the US. The cumulative
results from the subsequent research articles will serve as a foundation for research and policy related to the implementation of SIFs in the US.

1.7 Study Design & Sources of Data

1.7.1 Overview

I selected a mixed-methods approach to investigate public injection drug use in NYC to achieve the most comprehensive and participant-driven approach to understanding the context and risks of where PWID inject drugs. I used two sources of data: (1) quantitative data from the Injection Drug User Health Alliance Citywide Study (IDUCS) multi-wave cross-sectional survey of PWID in NYC, and (b) focus group sessions at two SEPs in NYC.

1.7.2 Overview of IDUCS Parent Study

The Injection Drug Users Health Alliance (IDUHA) is a coalition of 14 SEPs in NYC. Established in 2002, IDUHA aims to improve the health and quality of life of PWID through advocacy and direct service provision. In 2014, IDUHA implemented the IDUCS across all 14 SEPs in NYC. The primary goals of the IDUCS were to (a) describe service utilization across SEPS sites, (b) identify patterns in health, substance use, perceptions of life change and risk behavior, and (c) measure changes in risk behavior, health, and access to services over time. A full description of the development and execution of the IDUCS is described in an article under review. Findings from the most recent study wave are described in a separate article that has been accepted for publication as of March 2017.

Study Development

IDUHA formed a monitoring and evaluation committee comprised of staff with expertise in research and program evaluation in order to design the IDUCS study. The study was a collaboration between all NYC SEPs, and included involvement of participants and peer educator SEPs staff. All levels of staff were engaged in the development and implementation of
the study. Harm reduction program staff provided onsite supervision of field interviewers at all locations where data was collected.

**Programs and Sites**
Harm reduction programs were defined as any organization possessing a waiver for syringe exchange services issued by the New York State Department of Health (NYSDOH) in the five boroughs of NYC. The study took place at any site where harm reduction services were provided, including drop-in centers, storefront services, mobile units, single resident occupancy (SRO) hotels, and street-based outreach locations. See Appendix A for a map of the IDUHA program sites.

**Peer Educators**
Peer educators are individuals who have experience with drug use and provide syringe exchange services and education to PWID in their social networks. Peer educators connect with PWID who may not otherwise go to a program site, expanding access to syringe exchange and health education. Peer educators have contributed to successful community-based distribution of overdose prevention education and training, including naloxone distribution.\(^{179}\) The input of peer educators is included in SEP program design, educational materials, outreach strategies, and other aspects of engagement. Peer educators provided input on the survey instrument, including suggestions for phrasing of questions for clarity and cultural competence. Peer educators also co-facilitated several topics for field interviewer training sessions.

**Study Population**
The participants in the study were a point-in-time cross-section of people receiving services from any of the NYC SEPs. Eligibility criteria for the study included: (a) enrollment in at least one of the 14 programs; (b) ability to complete a face-to-face interview in English or Spanish; and (c) self-reported age of at least 18 years.
**Study Design**
The IDUCS used convenience sampling in order to yield the largest and most representative sample across all programs among participants accessing SEP services. The study also utilized field interviewers with paper-based surveys due to the fact that some participants only access services at mobile or street-based sites. Face-to-face interviews were used to ensure the surveys were completed fully and correctly. Field interviewers read all questions and answer choices aloud. The IDUCS used a repeated cross-sectional design to (a) conduct a pilot phase to ensure feasibility of the approach and to gather feedback on the survey instrument; (b) yield large sample sizes across all harm reduction sites; and (c) add a longitudinal component with matched cases to measure health and behavior change over time. The IDUCS survey was approved by the New York City Department of Health and Mental Hygiene (NYCDOHMH) Institutional Review Board (IRB).

**Survey Instrument**
The main survey topics were determined through a combination of identifying gaps in existing data, specific requests from government and private funders, and areas of focus related to health care reform and Medicaid expansion. The survey included 10 domains (see Appendix B): socio-demographic characteristics, utilization of SEPs services, housing, legal status, general drug use, injection drug use, overdose, health care utilization, mental health, and satisfaction with services. Measures were adapted from the CHAIN study on HIV and housing, NYCDOHMH Overdose Prevention survey, the National Survey of Drug User Health (NSDUH) (SAHMSA), and the National HIV Behavior Surveillance (NHBS) study. The survey was pilot tested with 12 participants before Wave 1 of the study. To minimize social desirability bias, they survey included scripted prompts and feedback from peer educators to ensure the language, order, and delivery of questions were sensitive and respectful. An external PhD-level researcher in the field
provided feedback and guidance on the survey development. The survey was conducted via face-to-face interview and took approximately 15 minutes to complete. See Appendix C for the Phase 3 Survey Instrument.

Unique Code
A unique code was utilized in the last two survey waves as a way to match cases in order to measure changes over time. Field interviewers created the code at the beginning of each interview. The 7-digit code consisted of a combination of the following: first initial of last name, first initial of first name, two-digit day of birth, two-digit year of birth, and first initial of gender identification. These items were chosen since they were unlikely to change over time and would be easy for participants to recall.

Field Interviewers
The survey was administered by 68 trained field interviewers. Field interviewers were recruited from SEP volunteer programs, academic institutions, e-mail lists, and online job postings. The majority of field interviewers were undergraduate-level students with an expressed interest in harm reduction. All field interviewers completed human subjects and ethics in research training. Field interviewers received a minimum of 16 hours of classroom-based training provided by the monitoring and evaluation committee and peer educators. Topics included an overview of harm reduction history, programs and services, outreach and engagement, drug use, safer sex and sex work, interviewing techniques, and trainings specific to the survey instrument (see Appendix D). In the latter two waves of the study, two training topics were added including cultural competency and when to refer participants to a program staff member. Peer educators facilitated the cultural competency sessions. Interviewers engaged in role-play and practice interview sessions.
Recruitment & Survey Procedures
Recruitment took place at 57 sites, including 18 offices and 6 mobile units. Participants were recruited upon arrival at a site where syringe exchange services were being offered. Interested participants were referred directly to a field interviewer to determine eligibility. If eligible, participants provided written consent. Participants were given a round-trip MTA Metro Card as incentive for their participation.

Figure 1A. IDUCS - Participant recruitment by survey wave

<table>
<thead>
<tr>
<th></th>
<th>IDUCS-P1 January 2014 (N=1,042)</th>
<th>IDUCS-P2 June 2014 (N=1,303)</th>
<th>IDUCS-P3 June 2015 (N=1,235)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Interviewers</td>
<td>45 (%)</td>
<td>17 (%)</td>
<td>15 (%)</td>
</tr>
<tr>
<td>Site Borough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manhattan</td>
<td>372 35.6</td>
<td>516 39.6</td>
<td>481 38.9</td>
</tr>
<tr>
<td>Bronx</td>
<td>402 38.6</td>
<td>515 39.5</td>
<td>404 32.7</td>
</tr>
<tr>
<td>Brooklyn</td>
<td>189 18.1</td>
<td>185 14.2</td>
<td>211 17.1</td>
</tr>
<tr>
<td>Queens</td>
<td>70 6.7</td>
<td>48 3.7</td>
<td>84 6.8</td>
</tr>
<tr>
<td>Staten Island</td>
<td>9 1.0</td>
<td>39 3.0</td>
<td>55 4.5</td>
</tr>
<tr>
<td>Site Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office-based</td>
<td>744 71.4</td>
<td>908 69.7</td>
<td>825 66.8</td>
</tr>
<tr>
<td>Street-based outreach</td>
<td>20 1.9</td>
<td>20 1.5</td>
<td>48 3.9</td>
</tr>
<tr>
<td>Mobile van or fixed unit</td>
<td>275 26.4</td>
<td>251 26.9</td>
<td>332 26.9</td>
</tr>
<tr>
<td>SRO or apartment</td>
<td>3 0.3</td>
<td>24 1.8</td>
<td>5 0.4</td>
</tr>
<tr>
<td>Other</td>
<td>0 0</td>
<td>0 0</td>
<td>25 2.0</td>
</tr>
</tbody>
</table>

Other included: food pantry, church, bus stop, subway entrance, park facility, deli, fast food restaurant

Data Compilation
Field interviewers conducted electronic data entry, with oversight by the IDUCS Project Coordinator. In Wave 1, quality assurance was conducted on 10% of the surveys: any inconsistencies between the paper-based survey and the electronic database were logged. Minimal errors were identified and were corrected and reviewed by the committee for
agreement. In Wave 2 and Wave 3, the Project Coordinator and committee members conducted the quality assurance activities.

1.7.3 Current Study

For this research, I included unduplicated data from Wave 2 and Wave 3. I added an additional selection criteria of self-reported injection drug use in the past three months to include only individuals who would report on places of injection drug use. I selected variables based on previous literature on public injection drug use, current and related health policies, and themes from focus group sessions. The final list of variables included in this research is in Appendix E. I reviewed missing data by variable by wave and mapped out original IDUCS variables and coding (see Appendix F), new variables and coding (see Appendix G), and group comparisons by wave (see Appendix H). The procedures for handling missing data are included in methods sections of the subsequent chapters.

1.7.4 Qualitative sub-study – focus group sessions

The purpose of the focus groups sessions was to (a) understand how PWID define what makes a place ‘public’ for injection drug use, (b) identify and discuss risk by place of injection drug use using photos of local places known to have injection drug use, (c) explore factors that contributed to deciding where to inject drugs, (d) discuss socio-demographic considerations related to risk, and (e) initial attitudes towards the concept of a SIF. The facilitator guide was developed with a research assistant and reviewed and modified several times in coordination with committee member Dr. Zarcadoolas (see Appendix I). The sub-study incentives were funded by the Doctoral Student Research Grant of the CUNY Graduate Center School of Public Health. The sites were selected based on access to participants and difference in organizational structure. I was serving as the Executive Director of one of the sites at the time and the second site was
interested in learning the findings of the focus group topic. The first site is one of the newer and smaller SEPs in NYC and the second site is one of the oldest and largest sites in NYC. I was interested in these two sites because they were both interested in exploring SIFs as a prospective intervention and because they varied in services and culture. This study was approved by the City University of New York (CUNY) City College Institutional Review Board (IRB) in June 2015.

1.7.5 Focus group sessions

In July 2015, I conducted five focus group sessions to explore participant experiences of public injection drug use. A total of 32 individuals participated in the sessions. Participants were recruited onsite by the researcher and research assistant and screened for eligibility (see Appendix J). All participants provided written consent (see Appendix K) to participate. Prior to the focus group sessions, participants completed a brief 14-item questionnaire with questions form the original IDUCS study (see Appendix L). Focus group sessions were one-hour long and audio recorded. All participants received refreshments and a $10 pharmacy gift-card for their participation.

1.7.6 Focus group analysis

I used thematic analysis to develop a list of main themes and sub-themes with a research assistant. We started with five themes based on the different sections of the facilitators guide. We both reviewed the transcripts independently to identify general themes that were related to the study topic. Then, we discussed overall impressions in person including differences between groups, initial impressions by site, and definitions of public injection drug use. Using a grounded theory approach, we developed a coding schema and included definitions and constructs of each theme. Then, we reviewed and coded the transcripts using the coding schema to identify
excerpts related to each theme. I conducted member checks with three participants of the focus
group sessions to clarify themes and presented excerpts and coded themes. At the end of the
process, we created a database to easily extract and review excerpts for discussion. We used
Dedoose™, an online qualitative data management software, to organize and store coded
transcripts.186

1.8 Analytical Approach

1.8.1 Overview

The study design flow chart is reflected in Figure 1B. I used a multi-phase model to analyze and
synthesize the quantitative and qualitative data. Multi-phase designs are used when one source of
data cannot fully explain a single phenomenon and is usually embedded within a larger study.187
The multi-phase model uses aspect of the transformative framework188 which is an approach to
analyzing data that is informed by other aspects of the study. It is used particularly with
marginalized populations, often in studies on gender, sexual orientation, and disability. Multi-
phase study designs also incorporate both sequential (e.g. conduct quantitative analysis, interpret
results, conduct qualitative analysis, then interpret) and convergent parallel (conduct quantitative
and qualitative at the same time, then interpret) elements of data collection and data analysis. In
this study, the quantitative and qualitative data informed each other at different points in both
analysis and study design. Below I describe the rationale for this approach and how each source
of data informed the other.
Figure 1B: Study Design Flow Chart
A multi-phase mixed-methods design

IDUCS Survey Data
PWUD sampled from 14 SEPs
Surveys collected June 2014 & June 2015
N=2241 (unduplicated)

Eligibility criteria of current injection drug use (preceding 3 months at time of survey)
N=820

Select cases with no missing data on variables based on a priori hypotheses
N=787

Bivariate & multivariate logistic regression analysis

Chapter 2: Place of Injection Drug Use and Hepatitis C Risk among PWUD in NYC
Hypothesis: public injection drug use is associated with increased odds of reporting the receptive reuse of injecting

Add 10 additional variables based on qualitative findings (drug treatment, overdose) and current health policy topics (medical services)

Quantitative analysis on cases with no missing data on 25 variables and with qual. excerpts
N=755

Chapter 3: Public Injection Drug Use in NYC
Hypothesis: public injection drug use is associated with a higher risk profile

Qualitative Sub-Study
5 focus group sessions at 2 SEP sites
July 2015
N=33

Operationalize explanatory variable public injection drug use based on focus group

Thematic Analyses for Key Themes

Excerpt selection of themes related to risk, priorities, and attitudes towards SIFs

Chapter 4: Calculated Risks & Tradeoffs: the experience of public injection drug use and attitudes towards SIFs
Hypothesis: (a) PWUD experience competing health and social risks depending on the place they inject drugs, and (b) PWUD would express positive attitudes towards SIF services
1.8.2 Qualitative Informs Quantitative

In this study, I had access to the IDUCS survey data and could analyze frequencies and relationships between place of injection drug use, risk behavior, socio-demographic characteristics, and other reported behaviors. However, the data alone was not going to be able to describe why PWID injected where they did and the relationship between place and risk, particularly the interplay between different risks. Further, I was interested in describing initial reactions to SIFs and their future implementation in NYC. Therefore, I developed a qualitative sub-study to answer these questions. I also developed the qualitative component to inform the approach to quantitative analysis. There were two ways in which the qualitative data informed the quantitative analysis. First, I did not have a solid definition of what ‘public injection drug use’ meant to the study population and existing literature varied in the way they defined public injection. Therefore, I developed a definition of public injection drug use based on feedback from focus group participants on (a) what generally makes a place public versus private and (b) after discussing specific types places whether they would describe them as public or private. This informed how I operationalized the public injection variable in the IDUCS survey data. The second way in which the qualitative data informed the quantitative analysis was in the inclusion of additional variables in models describing factors associated with public injection drug use. Themes from the qualitative data, including risk of overdose and arrest, were included in the quantitative models based on their prominence in focus group discussions.

1.8.3 Quantitative Informs Qualitative

The quantitative analysis also informed the qualitative study design. I conducted preliminary analysis on frequencies by place of injection drug use to inform which photos I would present for discussion in the focus group sessions. After reviewing the most frequent places of injection drug
use, I measured the association between each place of injection drug use and reported receptive sharing of injecting equipment. Based on places that had higher reported receptive sharing of injection drug use, we incorporated probes in the facilitator guide to understand why certain places may have higher reported receptive sharing of injecting equipment.

1.9 Organization of the Dissertation

The subsequent chapters include three research articles that answer the dissertation aims described below followed by a final discussion chapter specific to policy recommendations.

In Chapter 2, I aim to describe where PWID inject drugs in NYC and whether public injection drug use is associated with the receptive sharing of injecting equipment using the IDUCS survey data. I hypothesize that public injection drug use is associated with increased odds of receptive sharing of injecting equipment and, thus, elevated risk of HCV transmission. This chapter is a first step in forming a public health rationale for reducing public injection drug use.

In Chapter 3, I describe socio-demographic and behavioral characteristics associated with public injection drug use using both IDUCS survey data and focus group session data. I hypothesize that public injectors are more likely to report overall higher risk, including unstable housing, arrest, and non-fatal overdose. This chapter frames other health and social issues associated with public injection that has been minimized in other places where SIFs exist.

In Chapter 4, I describe the experiences of public injection drug use, competing health and social risks that factor into where PWID inject, and initial reactions to SIFs as a potential intervention in NYC using focus group data. I hypothesize that PWID will perceive public places as higher
risk for both health and social risks compared with non-public places. I also hypothesize that there are many competing priorities that impact risk behavior and that PWID will perceive a SIF to address these competing priorities. This chapter takes a deeper dive into understanding Chapter 2, describing potential reasons why PWID sharing injecting equipment. It also illustrates more clearly how a SIF may address some of these risk behaviors and initial acceptability of a SIF.

In Chapter 5, I synthesize the findings from Chapters 1 to 4 to discuss strengths of the study, limitations, policy recommendations, and the overall contribution to the literature.

1.10 Specific Aims

Aim 1: To describe where PWID inject drugs and measure the association between public injection drug use and the sharing of injecting equipment (proxy for risk of HIV and HCV) using bivariate and multivariate logistic regression with IDUCS survey data.

- **Sub-Aim 1a:** To describe the frequency of public injection drug use among PWID and whether public injection drug use is associated with receptive sharing of injecting equipment in the past three months.
  - **Hypothesis 1a:** Public injection drug use is associated with increased odds of the receptive sharing of injecting equipment.
Aim 2: To describe socio-demographic and behavioral characteristics of public injectors compared to non-public injectors using a mixed-method approach using IDUCS survey data and focus group session data.

- **Sub-Aim 2a:** To describe characteristics associated with public injection drug use using bivariate logistic regression with cross-sectional IDUCS survey data
  - *Hypothesis 2a:* Public injectors are more likely to be unstably housed, more likely to report past year arrest, and more likely to report past year overdose.

- **Sub-Aim 2b:** To describe the relationship between characteristics and public injection drug use through thematic analysis from focus group data.
  - *Hypothesis 2b:* Public injectors are more likely to report risk behavior compared with non-public injectors.

Aim 3: To describe how PWID view health and social risks of injecting in public places compared with private places through the use of thematic analyses with data from 5 focus group sessions.

- **Sub-Aim 3a:** To describe how public places are different from non-public places for injection drug use.
  - *Hypothesis 3a:* PWID will perceive public places as higher risk for health and social risks compared with non-public places.

- **Sub Aim 3b:** To describe how different health and social priorities interact with each other by place of injection drug use.
  - *Hypothesis 3b:* PWID will describe competing health and social priorities and risks when describing what makes a place safe for injection drug use.

- **Sub-Aim 3c:** To describe initial reactions and attitudes towards SIFs among PWID.
Hypothesis 3c: PWID will view a SIF as positive potential intervention to address risks associated with public injection drug use.
Chapter 2: Public injection drug use and risk: an observational study of people who inject drugs in New York City

2.1 Introduction

Illicit drug use and associated harms are increasing at alarming rates in the United States (US). One in ten Americans report over the age of 12-years old report that they’ve used illicit drugs in the past three months. Non-medical use of opioid analgesics, known as “prescription pain killers”, have contributed to a rise in heroin use and, in turn, injection drug use. Since 2011, several states have identified outbreaks of HIV and viral hepatitis C (HCV) due to injection drug use. In 2014, US surveillance data indicated that there were approximately 30,000 new cases of HCV in one year, representing a nationwide increase of over 150% since 2010.

People who inject drugs (PWID) account for 6% of new HIV infections and approximately 80% of new HCV infections in the US. There are approximately 1.2 million people living with HIV and 3.2 million people living with HCV in the US; approximately 13% are unaware of their HIV status. Early detection is key to prevent transmission to others via sharing injecting equipment. In New York, the development of rapid testing, pre-exposure prophylaxis (PrEP) medications, and linkage to treatment have been successful in reducing the number of new cases of HIV, resulting in a state-plan to end the HIV/AIDS epidemic by the year 2020. However, efforts and initiatives for HCV prevention and treatment have been slower and less widespread. HCV is ten time more infectious than HIV and can survive outside of the body in injecting paraphernalia for up to three weeks. Minimum age requirements for rapid HCV testing,
inadequate insurance coverage for treatment, and hesitance of providers to offer treatment to current substance users serve as barriers to test and treat PWID.\textsuperscript{73,198,199}

One of the primary risk factors for contracting HIV and HCV is sharing injecting equipment (i.e. syringes, cookers for preparing drugs, or cotton filters) with an individual who is infected.\textsuperscript{200–203} Using any injecting equipment that somebody else has already used is referred to as \textit{receptive sharing}. Factors associated with receptive sharing include female gender\textsuperscript{44,45}, younger age\textsuperscript{46}, homelessness\textsuperscript{47}, and a recent positive HCV test\textsuperscript{48}, number of injection episodes per day\textsuperscript{49}, any methamphetamine use\textsuperscript{50}, and cocaine as the primary drug of choice for injection\textsuperscript{51}, having a concordant hepatitis C status with an injecting partner\textsuperscript{52}, and a close relationship\textsuperscript{53} and trust\textsuperscript{54} in the individual with whom they are injecting. Syringe exchange programs (SEPs) have demonstrated to be effective at reducing HIV and HCV transmission among PWID by providing sterile injecting equipment and safe injection education.\textsuperscript{116,204} In New York, SEPs have been credited for substantial decreases in new HIV cases among PWID.\textsuperscript{205,206} SEPs use a harm reduction approach to drug use; addressing immediate harms of drug use as a key first step to health and wellness.\textsuperscript{207} Access to a sterile syringe for every injection reduces receptive sharing of injecting equipment.\textsuperscript{208} However, studies continue to document inadequate access to injection equipment due to inconvenience, fear of arrest, and experiences of stigma.\textsuperscript{96,209–211}

SEPs are further limited as a prevention intervention because, while they provide sterile injecting equipment, they rely on PWID applying safer injection practices elsewhere. For PWID who are unstably housed or homeless, they may be injecting in public places due to shelter and supportive housing requirements of abstinence. One recent study found that 56\% of managers of small
business with public bathrooms (i.e. restaurants, cafes) reported that they had encountered drug use or evidence of injection drug use (i.e. blood, syringes, injecting equipment) in the past three months. International studies found that public injection drug use was associated with a variety of risky injection practices, including self-reuse and receptive sharing of injecting equipment, inadequate preparation and cleaning of skin injection sites, and rushing injections. In addition to HIV and HCV transmission risks, these practices increase the risk of skin and soft tissue infection (SSTIs) which may develop into painful abscesses, staph infections, and endocarditis. Hospital stays due to SSTIs tend to be longer and more costly compared to non-SSTIs. One study of one public hospital found that SSTIs accounted for $11.5 million in spending over a 12-month period. Injection-related health risks and associated costs are preventable but require a level of intervention that addresses risk behavior in real time.

In order to prevent potential adverse health outcomes associated with public injection drug use, over 100 supervised injection facilities (SIFs) have been established in eleven countries around the world. SIFs are places where PWID may bring their own pre-obtained drugs to inject under the supervision of health professionals. The purpose of SIFs are to address challenges related to public injection drug; these include injecting in unhygienic environments, rushing injection due to fear of arrest or public view, fatal overdose, unsafe injecting techniques, and sharing injecting equipment. Over 70 peer-reviewed journal articles have demonstrated that they are effective in preventing HIV and HCV, fatal overdose, abscesses and wounds, and public injection. Beyond the primary goals, SIFs also increase connection and enrollment in other supportive services including drug treatment and medical services. They also are estimated to save millions of dollars a year by averting HIV infections alone. A recent study in San
Francisco suggests that one SIF may save the city $3.5 million per year.\textsuperscript{177} Despite the abundance of evidence that SIFs are both cost-effective and save lives, this model has not been implemented in the US.

New York City (NYC) has the largest population of people who inject drugs (PWID), with multiple sources estimating at least 105,000 current PWID.\textsuperscript{26,183,217} However, we do not know how many people inject in public places and how public injection is related to risky injection practices in the US. In this study, we aim to describe where PWID are injecting drugs and whether public injection drug use is associated with increased reports of receptive sharing of injecting equipment. We use reported receptive sharing of injecting equipment as a proxy for the risk of HCV transmission since we do not have biomarkers or seroconversion data. The relationship between the receptive sharing of injecting equipment and HCV seroconversion is well documented.\textsuperscript{197,218,219} We hypothesize that public injection drug use is associated with increased odds of receptive sharing injecting equipment.

### 2.2 Methods

In this study, we describe where PWID are injecting and the relationship between public injection drug use and receptive sharing of injecting equipment. We use observational survey data from the Injection Drug Users Health Alliance Citywide Study (IDUCS).\textsuperscript{74} The present study was approved by the City University of New York (CUNY) City College Institutional Review Board.
2.2.1 Overview of the Parent Study

The IDUCS is a multi-wave cross-sectional study which aimed to describe service access, health status, and risk behavior among people who use drugs in NYC. The study is the largest community-based survey of people who access SEPs in the US. IDUCS was administered in three waves: Wave 1 in January 2014 (n=1,042), Wave 2 in June 2014 (n=1,303), and Wave 3 in June 2015 (n=1,235). The first wave served as a pilot to test the survey instrument since several of the measures were not adapted from previously validated sources. The survey instrument was revised between Wave 1 and Wave 2 for clarity. Since it was possible for PWID to participate in the survey across all three waves, a personal identifier code was added to the survey instrument in Wave 2 in order to identify duplicates. Field interviewers generated the personal identifier using a combination of date of birth, gender, initials, site, and the participant’s mother’s name. Eligibility criteria to participate in the study included (1) self-reported age of 18 years or older, (2) enrollment in at least one of the SEPs (3) the ability to conduct an interview in English or Spanish, and (4) the ability to provide written, informed consent. Participants were recruited using convenience sampling across 14 SEPs at 57 unique sites across all five boroughs of NYC. Sites included drop-in centers, mobile units, non-traditional venues such as single-resident occupancy hotels and shooting galleries, and street-based outreach sites. Participants were recruited onsite by staff members of the SEP. Interested participants were referred to research personnel to determine eligibility. Interviewer-administered interviews were conducted by trained field interviewers using paper-based surveys. Participants were provided a $5.00 round-trip metro card for their participation.
2.2.3 Current Study

**Study Population**

Our study includes data from the last two waves of the IDUCS (n=2,538). We excluded the first wave due to the lack of a personal identifier to identify duplicates. Using the personal identifier, we identified 117 duplicate responses. We retained the Wave 3 response to reflect the most recent injection drug use patterns (n=2,421). In addition to the four eligibility criteria from the parent study, we added an extra eligibility criterion of current injection drug use, defined as any injection drug use in the three months preceding the survey. A total of 820 participants met these criteria. We dropped 33 participants who had missing data in any of the variables included in this study after ensuring that there were no significant differences across select variables between the final sample and excluded cases. No variable had more than 4 missing responses and there were no significant differences between the sample with missing data and the final sample. Our final sample size for this study is 787 participants.

2.2.4 Measures

The main outcome measure in this study is *Receptive Sharing of Injecting Equipment*. Receptive sharing of injecting equipment is defined as whether a participant reported receptive sharing of a syringe (yes vs. no), a cooker (yes vs. no), or a cotton filter (yes vs. no) that somebody else had already used. Participants who reported the receptive sharing of any type of injecting equipment are included in the *Any Receptive Sharing* group. Participants who did not report any receptive sharing of injecting equipment are included in the *No Receptive Sharing* group. In this study, *Any Receptive Sharing* is the proxy for the risk of HCV transmission and considered a risky injection practice.
The main explanatory variable is *Public Injection*. In the IDUCS survey instrument, participants were asked if they had ever in the past three months injected in the following categories (yes vs. no); street or park, stairwell, abandoned building, public bathroom, bus or subway or train, car or other vehicle, bathroom of a syringe exchange program, shooting gallery, home of a friend of family member, or your own home. We created a new variable *Public Injection* to measure the association between injecting in a public place and receptive sharing of injecting equipment. *Public Injection* is defined as injecting in any of the following places: street or park, stairwell, abandoned building, public bathroom, bus or subway or train, car or other vehicle, bathroom of a syringe exchange program, or a shooting gallery. We reviewed previous literature on public injection drug use to inform which categories are considered “public” versus “non-public”.

We determined that injecting in the categories of (a) home of a friend of family member or (b) your own home were not considered public. Participants who reported only injecting in these two categories are not included in *Public Injection*.

We include socio-demographic and potential confounding variables in the analyses. We selected potential confounders based on previous studies related to receptive sharing of injecting equipment and public injection drug use. Socio-demographic characteristics include age in years (under 30, 30-39, 40-49, and 50+), gender (male vs. female), and race/ethnicity (white, Black, Latinx, other). Other variables included housing (street-homeless, unstable, stable), arrest or incarceration in the past year (yes vs. no), syringe source in the past three months (options include syringe exchange program, pharmacy, from a friend/relative/acquaintance, from street or shooting gallery; yes vs. no for each), and past 30-day
substance use (options include alcohol, marijuana, methadone, heroin, crack, cocaine, methamphetamine, other opioids, benzodiazepines; yes vs. no for each).

2.2.5 Statistical Methods

First, we conducted descriptive statistics and present frequencies to describe the full sample. Next, we used bivariate logistic regression to compare participants who reported receptive sharing of injecting equipment with participants who did not report receptive sharing of injecting equipment. We reviewed unadjusted odds ratios, confidence intervals, and p-values to guide interpretation of significant associations. To test the hypothesis that public injection is associated with receptive sharing of injection equipment, we constructed a multivariate logistic regression model. We decided to include all of the variables from the bivariate logistic regression procedures with a p-value of 0.20 or less in the final multivariate logistic regression model. We used Chi-square tests and Cramer’s V to assess associations between independent variables and refine the model. All significant and non-significant variables are reported in the full model. All analyses were conducted using SPSS Statistics version 24.

2.3 Results

2.3.1 Sample Characteristics

A total of 787 participants were included in the analyses. The majority of participants were male (73%) and over the age of 40 years old (77%) (see Table 1). Over half of participants were homeless (29%) or unstably housed (42%). Nearly half had been arrested or incarcerated in the past year (44%). Syringe exchange programs were the most common source of syringes (94%). The most commonly used drugs in the past 30 days include heroin (83%), methadone (68%), cocaine (39%), and benzodiazepines (38%). Nearly all participants reported using at least one
opioid in the past 30 days (98%) and over a third reported the use of an opioid and benzodiazepine (38%).

2.3.2 Place of Injection Drug Use

Nearly two-thirds (64%) of participants reported public injection drug use. Injecting in one’s own home (71%) was the most common of any category, followed by the home of a friend or family member (59%) and public restroom (48%). Injecting on the bus, subway, or train (11%) was the least common of any category.

2.3.3 Receptive Sharing of Injecting Equipment

One quarter (25%) of participants reported they had receptive sharing injecting equipment at least once in the past three months. The following factors were significantly associated with the receptive sharing of injecting equipment at a p-value of <.05: younger age, black race/ethnicity, homelessness and unstable housing, past year arrest or incarceration, public injection, receiving a syringe from a friend/family/acquaintance, receiving a syringe from the street or shooting gallery, and past 30-day use of heroin, crack, cocaine, and methamphetamine.

Public injection was significantly associated with increased odds of reusing of injecting equipment in the unadjusted model (OR=3.46, CI: 2.31-5.19) and the adjusted model (AOR=1.66, CI: 1.04-2.65) (see Table 2). Receiving syringes from a friend, family member or acquaintance was the strongest factor associated with receptive sharing of injecting equipment (AOR=2.30, CI: 0.49-1.15). Unstable housing (AOR=1.96, CI: 1.19-3.25) and past year arrest or incarceration (AOR=1.69, CI: 1.15-2.48) were also significantly associated with the receptive
sharing of injecting equipment. Substance use factors that remained significant in the full model include past 30-day crack use (AOR=2.11, CI: 1.39-3.21), heroin use (AOR=1.97, CI: 1.119-3.47), and cocaine use (AOR=1.523, CI: 1.04-2.23).

2.4 Discussion

Our findings offer a new understanding of where PWID are injecting drugs and that public injection drug use is significantly associated with risky injection practices. It also may preliminarily serve as a rationale for implementing SIFs as a cost-effective and complimentary strategy to address risky injection practices that may contribute to new HIV and HCV outbreaks. This is the first study in the US to examine the association of public injection drug use.

2.4.1 Main Findings & Policy Implications

There are two main findings in this study. First, over half (64%) of PWID engaged in SEPs are injecting in public places. The prevalence of public injection in this sample is higher than the one other study (National HIV Behavioral Surveillance Study, 2009) on place of injection drug use in NYC (64% vs. 30%). This may mean that there are more people injecting in public places compared with past years. As described earlier in this article, public injection drug use poses risks to the PWID. Public injection also poses safety risks to the communities where there is public injection, primarily improperly discarded syringes. While it was not a primary aim of the study, we learned that over half (71%) of the study participants reporting they were street homeless or unstably housed during the same timeframe as reported public injection. Limited access to affordable housing and sobriety requirements of shelters and supportive housing may be one explanation for the prevalence of public injection. Housing First (HF) models prioritize housing over other supportive services, including drug treatment, and is based on the belief that
stable housing and stability is key to ensuring other supportive services are effective. The result is that PWID are not under threat of being kicked out of housing due to drug use, or provided no other option except to inject in public spaces, and are connected to supportive services. HF models have demonstrated to be both cost effective and successful in engaging and retaining chronically homeless adults in care.\(^{125,228}\) However, while housing policy reform is a first step, it is not the last. Nearly 20% of study participants who were stably housed reported public injection drug use. Implementing SIFs in areas of high public injection drug use may be one complementary strategy to ensure PWID have a safe, supervised place to inject.

Second, public injection is associated with a 63% increase in the odds of receptive sharing of injecting equipment. Only 12% of participants who injected in only non-public places reported any receptive sharing of injecting equipment compared to 38% of participants who injected in a public place. This is consistent with international studies that were conducted in the context of comparing injecting practices of PWID.\(^{229}\) In the US, punitive drug policies and policing practices, including Stop and Frisk\(^{230}\) and drug possession laws of the federal Controlled Substances Act\(^{231}\), are barriers to carrying sterile injecting equipment.\(^{98,232,233}\) They are also barriers to returning used syringes to SEPs or hazardous waste disposal sites due to fear of arrest.\(^{164,234}\) In New York, while a participant of a SEP may carry syringes with residue if they carry an enrollment card, drugs and injecting equipment with residue may result in arrest according to current law (New York Penal Code § 220.45). In short, if PWID do not have confidence to carry their own injecting equipment or a safe pathway to return used injecting equipment, the more likely they are to remain in the community for receptive sharing or be disposed of improperly.
The policy solutions to address public injection drug use and risky injection practices include both drug policy reform and improvements in syringe access. For drug policy reform, one approach to reduce barriers to safe injection practices would be to decriminalize drug use altogether. In Portugal, all drug use has been decriminalized since 2001 and has resulted in a decrease in drug use and an increase in drug treatment. Current US drug policy impedes harm reduction efforts. We found in our study that the source where PWID obtain syringes is a significant factor related to the receptive sharing of injecting equipment. Participants who obtained syringes from friends, family members, acquaintances or the street or a shooting gallery had significantly higher odds of receptive sharing of injecting equipment. Whereas receiving syringes from a SEP was associated with decreased odds of reusing injecting equipment, although not significantly. Consistent with the research on SEPs, access to sterile injecting equipment decreases the likelihood of reusing injecting equipment. However, PWID continue to receive syringes from other sources due to logistical and social barriers described earlier in this article. There are several ways to approach improving access to sterile injecting equipment. First, expand funding and support for SEPs and target their establishment in areas of high HCV and HIV prevalence. Funding and authorization is currently operated on a state level; a federal mandate to authorize SEPs in all states due to the emerging HCV epidemic would be the most effective, widespread approach to improving access to sterile injecting equipment. Second, pharmacy-based syringe access programs may be a cost-effective strategy to quickly reach a wide geographic area in the absence of SEPs. Third, decriminalize the possession of syringes and injecting equipment across all states. SEPs and pharmacy-based programs only promote access to sterile injecting equipment if PWID are legally able to obtain, carry, and
return the injecting equipment without fear of arrest. Lastly, SIFs should be implemented in areas where there is a concentration of PWID who otherwise are injecting in public places. In addition to minimizing the consequences of public injection, SIFs may also serve as a place to connect with high risk PWID for healthcare services. By connecting PWID with a regular source of care and preventing SSTIs, existing healthcare reform initiatives that focus on reducing preventable emergency department admissions may be more successful and cost-saving.

While it was not the primary aim of the study, there are several other findings that are worth mention. The use of crack was the substance use factor most strongly associated with receptive sharing of injecting equipment. Injectors who smoke crack are more likely to report injecting more often and overall higher frequencies of drug use compared with injectors who do not smoke crack. A PWID who uses crack may have more injections per day and, in turn, increased episodes of injection where they may be more likely to report receptive sharing of injecting equipment. We also know that smoking crack is also associated with both drug and sexual risk behaviors, trading sex for drugs or money, and HIV seroconversion.

Considering these risks, interventions to minimize risky injection practices should target people who also smoke crack. Drug consumption rooms (DRCs) which include safer smoking rooms may be one alternative in conjunction with SIFs to minimize risk among PWIDs.

2.4.2 Strengths & Limitations

There are several limitations of this study. This study is limited to an urban-dwelling population in NYC and may not be generalizable to all communities. Cross-sectional data prohibited any temporal associations between receptive sharing of injecting equipment and independent
variables. The measures of place of injection drug use are adopted from the NHBS\textsuperscript{25} study but have not been validated in any other study. The definition of each category of place of injection drug use was subjective and may vary in terms of their physical and social attributes. Housing status was defined as where an individual slept most often in the past three months and, therefore, an individual may have experienced variations in housing status during the three months prior to the survey. Lastly, receptive sharing of injecting equipment is limited to occurring once over the past three months and does not account for the level of receptive sharing beyond one time. Despite these limitations, this study represents the largest sample of PWID in NYC on the topic of place of injection drug use. It also unearths that PWID are commonly injecting in public places in NYC and that injecting in a public place is associated with risk behavior. As a national conversation emerges on alternatives to public injection,\textsuperscript{153,243,244} these findings offer recent data to support a public health rationale to integrate SIFs and DCRs in NYC.

2.4.3 Conclusion

Public injection drug use is prevalent in NYC and is associated with increased odds of receptive sharing of injecting equipment and, in turn, HCV transmission risk. Our study provides a new understanding of public injection drug use in NYC and a public health rationale for the implementation of new evidence-based strategies to address injection-related risk. Solutions to public injection drug use include improving access to affordable housing and shelter for PWID, drug policy reform, improving syringe access, and implementing SIFs.

2.5 References

To be formatted in separate article
2.6 Tables and Figures
Table 2A Socio-demographic and behavioral factors association with receptive sharing of injecting equipment in the past 3 months among PWID (n=787)

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<td>Homeless</td>
<td>232</td>
<td>29%</td>
<td>75</td>
<td>38%</td>
<td>157</td>
<td>27%</td>
</tr>
<tr>
<td>Unstable</td>
<td>329</td>
<td>42%</td>
<td>92</td>
<td>47%</td>
<td>237</td>
<td>40%</td>
</tr>
<tr>
<td>Stable</td>
<td>226</td>
<td>29%</td>
<td>28</td>
<td>14%</td>
<td>198</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Arrested or incarcerated in the past year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Injection (past 3 months)</td>
<td>503</td>
<td>64%</td>
<td>161</td>
<td>83%</td>
<td>342</td>
<td>58%</td>
</tr>
<tr>
<td><strong>In the past 3 months, injected drugs at least once in...</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street or park</td>
<td>296</td>
<td>38%</td>
<td>119</td>
<td>61%</td>
<td>177</td>
<td>30%</td>
</tr>
<tr>
<td>Stairwell</td>
<td>248</td>
<td>32%</td>
<td>103</td>
<td>53%</td>
<td>145</td>
<td>24%</td>
</tr>
<tr>
<td>Abandoned Building</td>
<td>170</td>
<td>22%</td>
<td>75</td>
<td>38%</td>
<td>95</td>
<td>16%</td>
</tr>
<tr>
<td>Public Bathroom</td>
<td>380</td>
<td>48%</td>
<td>134</td>
<td>69%</td>
<td>246</td>
<td>42%</td>
</tr>
<tr>
<td>Bus, Subway or Train</td>
<td>88</td>
<td>11%</td>
<td>33</td>
<td>17%</td>
<td>55</td>
<td>9%</td>
</tr>
<tr>
<td>Car or other vehicle</td>
<td>202</td>
<td>26%</td>
<td>77</td>
<td>39%</td>
<td>125</td>
<td>21%</td>
</tr>
<tr>
<td>Bathroom of a syringe exchange program</td>
<td>176</td>
<td>22%</td>
<td>57</td>
<td>29%</td>
<td>119</td>
<td>20%</td>
</tr>
<tr>
<td>Shooting gallery</td>
<td>118</td>
<td>15%</td>
<td>55</td>
<td>28%</td>
<td>63</td>
<td>11%</td>
</tr>
<tr>
<td>Syringe Source (past 3 months)</td>
<td>465</td>
<td>59%</td>
<td>142</td>
<td>73%</td>
<td>323</td>
<td>55%</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Your own home</td>
<td>561</td>
<td>71%</td>
<td>128</td>
<td>66%</td>
<td>433</td>
<td>73%</td>
</tr>
<tr>
<td>Syringe Exchange Program</td>
<td>737</td>
<td>94%</td>
<td>180</td>
<td>92%</td>
<td>557</td>
<td>94%</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>371</td>
<td>47%</td>
<td>107</td>
<td>55%</td>
<td>264</td>
<td>45%</td>
</tr>
<tr>
<td>Friend, Relative or Acquaintance</td>
<td>195</td>
<td>25%</td>
<td>85</td>
<td>44%</td>
<td>110</td>
<td>19%</td>
</tr>
<tr>
<td>Street or Shooting Gallery</td>
<td>117</td>
<td>15%</td>
<td>59</td>
<td>30%</td>
<td>58</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Past 30 days Drug Use**

| Alcohol                        | 292 | 37% | 81  | 42% | 211 | 36% | 1.28 | .92-1.79  | .14      |
| Marijuana                      | 246 | 31% | 55  | 28% | 191 | 32% | 0.83 | .58-1.18  | .29      |
| Methadone                      | 539 | 68% | 140 | 72% | 399 | 67% | 1.23 | .86-1.76  | .25      |
| Heroin                         | 652 | 83% | 176 | 90% | 476 | 80% | 2.26 | 1.35-3.78 | .002**   |
| Other Opioids b                | 174 | 22% | 52  | 27% | 122 | 21% | 1.40 | .96-2.04  | .08      |
| Crack                          | 183 | 23% | 73  | 37% | 110 | 19% | 2.62 | 1.84-3.74 | <.001*** |
| Cocaine                        | 305 | 39% | 106 | 54% | 199 | 34% | 2.35 | 1.69-3.27 | <.001*** |
| Crack and Cocaine             | 118 | 15% | 49  | 25% | 69  | 12% | 2.54 | 1.69-3.83 | <.001*** |
| Methamphetamine               | 27  | 3%  | 12  | 6%  | 15  | 3%  | 2.51 | 1.16-5.47 | .02*     |
| Benzodiazepines c             | 301 | 38% | 85  | 44% | 216 | 36% | 1.35 | .97-1.87  | .08      |
| Any opioid (heroin, methadone and/or opioid analgesic) | 770 | 98% | 194 | 99% | 576 | 97% | 5.39 | .71-40.90 | .10      |

| Any opioid + benzodiazepines | 300 | 38% | 85  | 44% | 215 | 36% | 1.36 | .98-1.88  | .07      |

---

*a* Housing status defined as homeless (street homeless), unstable housing (jail, prison, rooming with others, shelter, temporary housing, hospital, drug treatment), stable housing (own home or live with friend/family member)

*b* Other Opioids include opioid analgesics or “pain killers” such as hydrocodone, Oxycontin, Percocet, Vicodin

*c* Benzodiazepines or “downers” include anti-anxiety medication such as Klonopin and Xanax
Table 2B. Factors associated with receptive sharing of injecting equipment in the past three months among PWIDs in NYC using a multivariate logistic regression model (n=787)

<table>
<thead>
<tr>
<th></th>
<th>AOR</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Injection a (past three months)</td>
<td>1.66</td>
<td>1.04-2.65</td>
<td>0.033*</td>
</tr>
<tr>
<td>Unstable Housing b (past three months)</td>
<td>1.96</td>
<td>1.19-3.25</td>
<td>0.009**</td>
</tr>
<tr>
<td>Arrested or incarcerated (past year)</td>
<td>1.69</td>
<td>1.15-2.48</td>
<td>0.007**</td>
</tr>
<tr>
<td>Alcohol Use (past 30 days)</td>
<td>0.93</td>
<td>0.63-1.35</td>
<td>0.69</td>
</tr>
<tr>
<td>Heroin Use (past 30 days)</td>
<td>1.97</td>
<td>1.12-3.47</td>
<td>0.02*</td>
</tr>
<tr>
<td>Crack Use (past 30 days)</td>
<td>2.11</td>
<td>1.39-3.21</td>
<td>&lt;0.001***</td>
</tr>
<tr>
<td>Cocaine Use (past 30 days)</td>
<td>1.52</td>
<td>1.04-2.23</td>
<td>0.03*</td>
</tr>
<tr>
<td>Methamphetamine Use (past 30 days)</td>
<td>1.73</td>
<td>0.70-4.31</td>
<td>0.24</td>
</tr>
<tr>
<td>Benzodiazepine Use (past 30 days)</td>
<td>1.14</td>
<td>0.77-1.68</td>
<td>0.50</td>
</tr>
<tr>
<td>Syringes from a friend, family or acquaintance (past 30 days, yes vs. no)</td>
<td>2.30</td>
<td>0.49-1.15</td>
<td>&lt;0.001***</td>
</tr>
<tr>
<td>Syringes from the street or shooting gallery (past 30 days, yes vs. no)</td>
<td>1.83</td>
<td>1.10-3.03</td>
<td>0.02*</td>
</tr>
</tbody>
</table>

Model adjusted for age, gender and race/ethnicity

*** p<.001  **p<.01   *p<.05

a Public Injection defined as injecting at least once in the past three months in the following categories: street or park, stairwell, abandoned building, public bathroom, bus or subway or train, car or other vehicle, bathroom of a syringe exchange program, or a shooting gallery.

b Unstable housing includes street homeless and unstable housing categories (jail, prison, rooming with others, shelter, temporary housing, hospital, drug treatment)
Chapter 3: Characteristics associated with public injection drug use: a mixed-methods study

3.1 Introduction

The United States (US) has seen a steady rise in injection drug use as individuals transition from non-medical use of prescription opioid analgesics (also known as prescription painkillers) to the use of heroin.\textsuperscript{17,20} In 2014, there were 2.3 million Americans who reported using prescription opioids non-medically.\textsuperscript{245} Individuals who use prescription opioids non-medically are nine times more likely to start using heroin compared with those who don’t.\textsuperscript{5} Recent research has described a pathway to the initiation of injection drug use via non-medical use of opioid analgesics; an individual develops a need and tolerance to opioids and find that heroin is cheaper and more accessible than opioid analgesics.\textsuperscript{22} This has resulted in a new cohort of new injectors who, in addition to overdose, are at risk of contracting HIV, HCV, and bacterial infections.\textsuperscript{190,246–248} Recent outbreaks of HIV and HCV across the country have been attributed to new cohorts of people who inject drugs (PWID).\textsuperscript{16,62,190} Compounded by the concurrent opioid overdose epidemic, the demand for effective interventions to reduce risk and improve health among PWID has become a national priority.

PWID are vulnerable to a variety of negative health outcomes. PWID comprise 22\% of people who are living with HIV infection and 48\% of people who report living with HCV.\textsuperscript{32,41} The transmission of blood-borne infections (HIV, HCV) and bacterial infections can lead to painful, costly, and potentially fatal outcomes. Risky injection practices, including self-reuse or receptive sharing of injecting equipment, inadequate preparation and cleaning of an injection site, and rushing injections, increase the risk of HIV/HCV transmission and bacterial infections.\textsuperscript{42,53,249,250}
Over 80% of individuals who contract HCV will go on to develop chronic liver disease. Treatment for HIV for HCV are costly and, particularly for HCV, may be inaccessible or unaffordable in many states. Bacterial infections may quickly develop into staph infections and endocarditis, resulting in costly emergency department (ED) admissions and hospital stays. The burden of injection-related infections costs lives and healthcare spending, and is largely preventable.

To prevent risky injection practices, states have implemented syringe exchange programs (SEPs) and pharmacy-based syringe access programs to offer sterile injecting equipment and safe injection education to minimize injection-related risk among PWID. SEPs have been heralded as the gold standard for reducing injection-related infections and transmission among PWID. However, PWID continue to experience barriers to consistently using one sterile syringe for every injection. Some of these barriers include inadequate access to storing injecting equipment due to homelessness or unstable housing, fear of arrest due to punitive policing and drug policies, logistical barriers including distance and hours of operation, and experiences of stigma. Furthermore, state-by-state regulations to authorize SEPs and pharmacy-based syringe access programs mean that PWID who reside in states without syringe access programs have even more limited access. SEPs are also limited to providing prevention interventions that rely on the ability of PWID to apply safe injection practices. A recent study found that 64% of PWID inject in public places and that public injection drug use is associated with increased odds of receptive sharing of injecting equipment (Chapter 2). Even if PWID are able to obtain sterile injecting equipment, it is not enough to prevent risky injection practices.
Outside of the US, supervised injection facilities (SIFs) have been established to prevent the health and social harms of public injection drug use. SIFs are sanctioned places where PWID can bring pre-obtained drugs to prepare and inject under the supervision of healthcare personnel. Since 2003, North America’s first SIF has demonstrated to reduce fatal overdose, public injection, risky injection practices, new cases of HIV and HCV, and emergency department visits due to injection-related infections.\textsuperscript{153,260} It has also demonstrated to increase engagement and retention in medical and drug treatment services while saving the city of Vancouver and estimated $6 million per year in healthcare spending. As of 2017, there are over 100 SIFs in operation in eleven countries, with at least three more planned by 2018.\textsuperscript{149} Despite the overwhelming body of research that demonstrates the efficacy of SIFs in preventing injection-related infections and fatal overdose, the US has yet to adopt SIFs into the continuum of care options for PWID.

In the US, the research on public injection drug use is limited. In 2009, the National HIV Behavioral Surveillance Study (NHBS) found that 30% of PWID surveyed in New York City (NYC) had reported that they had injected drugs in a public place in the past three months.\textsuperscript{176} However, the association between public injection drug use and risky injection practices was not described. A more recent study found that over half (54%) of managers of fast food restaurants and small businesses with public bathrooms had found evidence of injection drug use (i.e. discarded syringes, blood, injecting equipment) in the past 3 months.\textsuperscript{106} With an estimated 105,000 people who inject drugs (PWID) in NYC,\textsuperscript{114,183} understanding characteristics and risks associated with public injection drug use may direct and inform new interventions for PWID. Furthermore, healthcare reform efforts in New York have focused on reducing the number of
preventable ED admissions. One of the strategies includes identifying and connecting high utilizers of the ED to a more regular source of primary care. Consistent with the international literature, SIFs reduce preventable ED admissions and connection to both regular health care and drug treatment. If public injectors report more frequent visits to the ED and lower engagement with primary care, the findings of this research may provide insight into how to connect and engage with high utilizers of the ED to reduce healthcare spending.

In this study, we use a mixed-methods approach to explore characteristics and risk factors associated with the public injection drug use. We hypothesize that PWID who inject in public have a higher risk profile. This is the first mixed-methods study to focus on public injection drug use and describe characteristics associated with public injection drug use in NYC.

3.2 Methods

Our study includes 1) cross-sectional survey data from the Injection Drug Users Health Alliance Citywide Study (IDUCS) and 2) focus group data from a qualitative sub-study. We selected multi-phase mixed-methods design to fully describe the relationship between risk behavior and public injection drug use.

In this study, we used the qualitative data to both inform the analytic approach and to describe the relationship between public injection drug use and risk behavior. First, we describe the quantitative study. Then, we describe how we used the qualitative sub-study to operationalize the outcome variable and select additional explanatory variables. Lastly, we describe the qualitative sub-study. The current study was approved by the City University of New York (CUNY) City
College Institutional Review Board. Funding for the qualitative sub-study was provided by the Doctoral Student Research Grant at the CUNY Graduate Center.

3.2.1 Quantitative Study

The IDUCS is a study of PWID enrolled in NYC SEPs. The multi-wave, cross-sectional study aimed to measure SEPS service access, health status, and risk behavior among PWID in NYC. Using convenience sampling, PWID were recruited at 57 unique sites of 14 SEPs in all five boroughs of NYC. Sites included drop-in centers, mobile units, community tabling events, and during street-based outreach sessions. Eligibility criteria included (1) self-reported age of 18 years or older, (2) enrollment in one of the SEPs, (3) the ability to conduct an interview in English or Spanish, and (4) the ability to provide consent. The development of the survey instrument and methodology is described elsewhere. Interviewer-administered surveys were conducted by trained field interviewers. Eligible participants were provided with a $5.00 metro card for their participation at the end of the survey.

Quantitative Sample

Our study includes unduplicated responses from Wave 2 (June 2014) and Wave 3 (June 2015) (N=2,421). We excluded responses from Wave 1 (January 2014) since it served as a pilot and did not have personal identifiers to identify duplicate responses. In addition to the four eligibility criteria of the parent study, we added an extra criterion of reporting injection drug use in the past three months to select only participants who would have been asked questions related to where they injected drugs in the past three months. A total of 820 participants met these criteria. There were few missing data points, but we excluded participants who had any missing data (n=65). Each measure had at least one missing data point but did not exceed 10 per measure. An analysis
of the sample characteristics between cases with complete data and cases with missing data did not yield any significant differences or patterns, appearing to be missing at random. Our final sample size for the quantitative analyses is 755 participants.

**Analysis**

Our analysis aims to describe characteristics and risks associated with public injection drug use compared with private injection drug use. First, we constructed the primary outcome variable guided by the results from the qualitative sub-study described later in this section.

**Construction of the Outcome Variable**

The IDUCS survey collected data on where participants had injected drugs in the three months preceding the survey. Participants were asked if they had ever injected drugs in the following places; the street or park, a stairwell, an abandoned building, a public bathroom, a bus or subway or train, a car or other vehicle, a bathroom of a syringe exchange program, a shooting gallery, the home of a friend of family member, or their own home. While some of the places were more clearly identifiable as public (e.g. park or street), there were several categories that could be categorized as either public or private (e.g. public restroom). Therefore, we developed a qualitative sub-study to discuss what makes a place private or public for injection drug use with PWID to guide how to define public injection. The participants of the sub-study were recruited from two of the sites included in the IDUCS survey with the intention of capturing a similar population that would have participated in the IDUCS survey.

**Explanatory Variables**

We selected 25 explanatory variables from IDUCS for this study. We initially included socio-demographic variables to describe the sample. We also included potential covariates, including
housing status and general drug use, based on previous research. Based on the key themes from the qualitative sub-study, we added variables related to arrest, overdose, drug treatment, and mental health. Lastly, we include variables of health service access due to current policy discussions related to improving minimizing preventable ED admissions through enhanced access to primary care services among people who use drugs.\textsuperscript{80,261} Below we describe how the data were collected in the IDUCS and the process and rationale for re-coding variables for this study.

We selected the following variables to describe the population: (1) age, measured in years. We created a new variable to categorize age: under 30, 30-39 years old, 40-49 years old, and over the age of 50-years old. We decided on these categories based on patterns of association with public injection and natural cut points, and to have age categories consistent with those presented in health department data for future comparison; (2) gender, coded as self-identified gender (male vs. female); and (3) and race/ethnicity (white vs. black vs. Latinx vs. other).

We selected the following variables as potential covariates identified in previous research:\textsuperscript{265,266} (1) housing status, reported as where they had slept most often in the three months preceding the survey. IDUCS includes three categories; street-homeless, unstably housed, and stably housed. Street-homeless is defined as any public place (street, park, subway, bus station, ATM lobby, building stairwell, roof or basement). Unstably housed is defined as a shelter for homeless people, jail or prison, single room occupancy facility or welfare hotel, drug treatment or a program, three-quarter housing, non-drug treatment setting (supportive housing or transitional housing), or a hospital or nursing home or hospice. Stably housed is defined as living with
friends, family, or a partner or your own place (apartment or a house that is your home); (2) general drug use, measured as having used any of the following drugs at least once in the 30 days preceding the survey. Drugs include alcohol, marijuana, methadone, heroin, crack, cocaine, methamphetamine, other opioids (include opioid analgesics known as “pain killers”), or benzodiazepines (yes vs. no for all drug types).

We selected the following variables based on key themes from the qualitative sub-study as being related to place of injection drug use: (1) past year arrest or incarceration, reported as arrest or incarceration within the past year preceding the survey (yes vs. no); (2) overdose, reported as whether they had ever experienced an overdose in their lifetime (yes vs. no), experienced an overdose in the past year (yes vs. no), or whether they had witnessed an overdose in the past year (yes vs. no); (3) methadone use, reported as whether they were currently enrolled in a methadone program at the time of the survey (yes vs. no) or if they had used methadone not prescribed in the 30 days preceding the survey (yes vs. no); (4) suboxone use, reported as whether they were currently prescribed suboxone, an opioid replacement therapy, at the time of the survey (yes vs. no) and whether they had used non-prescribed suboxone, bought off the street or from a friend, in the 30 days preceding the survey (yes vs. no); (5) mental health symptoms, reported as whether they had experienced symptoms of depression, anxiety, and/or hallucinations in the past three months (never vs. sometimes vs. often). We created a binary variable for the multivariate model and collapsed sometimes and often compared with never for a measure of any depression, anxiety, or hallucination symptoms.
We selected the following variables based on current health policy discussions related to healthcare reform and initiatives to reduce drug-related harm: (1) past year ED admission, reported as whether a participant had been admitted to the ED in the year preceding the survey (yes vs. no); (2) have a primary care provider (PCP), reported as having a PCP at the time of the survey (yes vs. no).

3.2.2 Qualitative Sub-Study

As noted above, we used a qualitative sub-study to guide our development of a definition of public injection, to develop our main outcome variable public versus private injection based on the survey data, and to determine which participant characteristics and risk factors to include in our quantitative models. Here we describe this qualitative approach. We conducted five focus group sessions July 2015 at two SEPs that were included in the IDUCS parent study. Both SEPs were located in Manhattan, provide both office-based and outreach-based syringe exchange to PWID, and operate in underserved communities. The major differences between the two SEPs are in the organizational history (8 years of operation versus 21 years of operation) and size (10 staff versus 30 staff). Participants were recruited using convenience sampling in drop-in centers of both SEPs during the afternoon where syringe exchange services were offered. Interested participants were screened for eligibility, which included the same eligibility criteria as the IDUCS study with an additional requirement of reporting any injection drug use in the past three months. Eligible participants were included in the focus group session at the site.
**Specialized Session**

After completion of the first four focus group sessions, we noticed that the median age of the focus group participants (48 years) was higher than the IDUCS sample median age (44 years). To ensure that our qualitative data reflected a more comparable distribution of participants by age, the last session recruited participants under the age of 30 years old. For this session we used snowball sampling, where one participant recruited other individuals under the age of 30. We were successful and reduced the group median age to 44 years of age.

**Focus Group Procedures**

Focus groups were led by the two researchers, both with expertise in SEPs and facilitating groups with PWID. The focus group followed an open-ended facilitators guide, which was designed to discuss three main topics: 1) what makes a place public versus private for injection drug use; 2) what factors influence where a PWID injects drugs; and 3) risks associated with injecting in public places. Groups were audio-recorded and lasted approximately 60 minutes. Participants were provided with a $10 pharmacy gift card for their participation.

**Focus Group Data Analyses**

Focus group audio recordings were transcribed by the two researchers and reviewed for accuracy. We used a multi-step process to analyze the focus group data using thematic analysis. First, we independently reviewed the transcripts for general themes. Then, we met to discuss the general themes related to the study objectives. Using grounded theory, we came to consensus on what the key themes through discussion and enhanced definition. The most frequently discussed themes that emerged included; 1) defining privacy; 2) risks by public place
of injection; 3) risks by private place of injection; and 4) components that make a place safe.

Both team members applied parent codes (key themes) and child codes (sub-themes) to all five transcripts. The lead researcher conducted member checks with three unique individuals and presented the definitions and key themes for clarity. All analyses were conducted using Dedoose™, a cross-platform qualitative and mixed method analytic software system, to code and excerpt narratives from the focus group sessions.

3.2.3 Data Integration

We used the findings from the qualitative sub-study to understand what makes a place public versus private from the perspective of PWIDs to have the most culturally accurate definition of public injection drug use for the quantitative analyses. Then, we reviewed the data for key themes related to public places to determine what other variables may be critical to include in the quantitative analyses. We selected narratives that described the relationship between the variables and places of injection drug use that participants identified as public, including how the factors were related to each other. We learned that, consistent with the risk environment framework, that there are competing perceived risks depending on the place of injection drug use and that these risks impede the ability for PWID to practice safe injection techniques. The rich narratives of the qualitative sub-study could provide an in depth discussion of how PWID define privacy or how different social, environmental, and health factors influence and explain risk behavior. However, for the purposes of this study, we describe factors associated with public injection drug use and some preliminary discussion of how these factors may be related to risky injection practices.
3.2.4 Statistical Methods

We first describe the characteristics of the sample, including the prevalence of public versus private injection. Then, to determine characteristics associated with public injection versus private injection, we conducted bivariate logistic regression to produce odds ratios to measure associations of all 25 explanatory variables and public versus private injection. We reviewed odds ratios, 95% confidence intervals, and p-values to guide our interpretation of associations. We adopted an alpha of .05 to guide interpretation of significant findings. All statistical analyses were conducted using SPSS Statistics version 24.225

3.3 Results

The nature of the multi-phase design in mixed-methods research involves an iterative process of using two different sources of data to describe different aspects of one phenomenon. In this study, we used a qualitative sub-study to inform both the methodology of the study and describe the quantitative results of the study. For clarity, we are presenting the findings from the qualitative sub-study first to describe how we defined public injection drug use and which factors to include in the quantitative analyses. Then, we will present the main findings from the quantitative study to report characteristics associated with public injection.

3.3.1 Qualitative Sub-Study Results

We developed the qualitative sub-study design to define public injection drug use as the primary outcome variable, select variables to include in the quantitative analyses, and describe the environment where PWID inject as it relates to risk behavior.
Defining Public Injection

Previous studies have described public injection in a variety of ways, ranging from only street-injection drug use to multi-level categories of public injection drug use, including ‘public’, ‘semi-public’, and ‘private’ places. We felt it was important to have a definition of public injection that was developed using narratives of PWID to ensure that it was relevant to NYC environments where people inject and derived from people who have experience injecting in public places. We reviewed excerpts from the section of the focus group that discussed what makes a places private for injection drug use, which we conceived of as the opposite of what would make a place public.

Key Themes

We identified four key themes related to what makes a place public versus private: physical features, control over who has access to the space, trust in the people who are present in the space, and exposure to being seen or arrested. What made a place public or private was a combination of these themes.

Physical features. Participants were asked explicitly what made a space public and what made a space private. Some descriptions were related to physical features of a space:

“Nobody has a key, curtains on the windows…”

“The doors have double locks... mine has like seven”

“Walls all around you so people can’t see”
**Sense of control.** Some descriptions included physical features but described a sense of control over the space, including the ability or right to a space, such as “you pay rent”, “ownership”, or “on the lease” of a space.

“...you’re the only one that goes in there, its your apartment, you have keys, your lease, its not an SRO, its not a building like a shelter building like the [name of transitional housing residence] stuff where people are in and out...its yours. Your name on the lease, you decide who comes and who goes...”

**Trust in people who are in the space.** There was some discrepancy about whether having a dedicated room was considered private. Some participants felt that a room in an apartment with roommates or supportive housing was not private:

“...What makes it private for me is that you don’t have to give up some of your privacy for somebody [to] get in your house, like that right there, where you can walk around naked you can walk around in your underwears when its hot, I’m just saying if you have someone in your house that your renting to so that means you’re shutting down your privacy...”

“Well, I live in a different room but the other rooms you have to be let in with a key by the security or whoever you want to call them... so I don’t know if I’d consider that private because its not your private place...”
However, some participants described knowing who was in the space was the element of control that was the most important consideration. In the following excerpt, one participant describes the impact of knowing and trusting who was in the space even if behind a closed door:

“...your home bathroom, your boyfriends bathroom, your friends bathroom, so long as there’s someone you can trust that’s not gonna call the cops on you... and if you think they’re gonna call the cops on you just put the lock on the door and make sure you have the window open so you can throw the needle out when the cops come...”

“... if you have your own room, that’s privacy right there. So long as you can lock the door and you know who is out there, I’d say that’s private.”

**Exposure to being seen or arrested.** Throughout all five focus group sessions, policing were significant frameworks of the day-to-day reality of decision-making related to injection drug use. Most of the narratives related to whether a space was private or public was discussed in the context of avoiding being seen, primarily by law enforcement:

“So long as you know who is out there and nobody is watching you, its private. If someone is watching you, it could be more on the public side... but if you have some time, that’s really what its about for me (the privacy)...”

“...in my house and I don’t have to worry about somebody watching me, or like he said the cops...”
We learned that while the combination of these key themes made a place public or private, if a place had physical features of privacy but was high on the spectrum of potential arrest or not having a sense of control, it was identified as public. We saw this in the majority of the narratives that identified non-residential places as public, even if they had some of the physical features of privacy. It was clear that ‘Own Place’ was considered private and, while there were some discordant perspectives, ‘Home of a friend or family member’ was categorized as a private place due to reduced likelihood of arrest and some expected knowledge of who was in the space. While a shooting gallery may be a residence, participants expressed in all focus groups that there was increased risk for arrest and general distrust in other PWIDs at shooting galleries. The other categories of place of injection drug use were considered public. We define a public place in the context of injection drug use as “any place where a PWID has a low sense of control of who can access the space and how long they have to prepare, administer, and clean up after an injection.”

Factors Associated with Public Injection Drug Use

Participants in all sessions acknowledged that injection drug use is not safe and that “safety” of a place depended on “safe from what”. Participants described their experiences of injecting in a public place (see Figure 3A). The four key themes associated with public injection include fear of arrest, level of withdrawal, fear and shame of ‘being caught’ or ‘seen’, and rushing injections. Rushing injection was often described in the context of the first three key themes, but also related to preparation and use of sterile injecting equipment. For this reason, we maintained it as a separate key theme to describe the interplay between fear of arrest, level of withdrawal, and
being caught or seen. The narratives related to rushing injections also explain the mechanism of risk for inadequate preparation and injection-related risk behavior. The more a participant is fearful of arrest, in withdrawal, or avoiding being caught, the more likely they are to rush injections. If they are rushing an injection, they are less likely to prepare the injection site and/or use sterile injecting equipment. The key theme associated with private injection was fear of overdose. Participants described that the primary concern injecting in a private place was a fear of overdosing and not having a bystander to call 911 or administer naloxone, an antidote for opioid overdose.

Based on these findings, we included measures of overdose history, drug treatment, and mental health in the subsequent quantitative analyses. We also include two measures of taking either methadone or buprenorphine not prescribed as potential proxies for withdrawal. Many participants described these as strategies for coping with withdrawal and have been described in the literature.\textsuperscript{270}

3.3.2 Quantitative Study Results

\textit{Sample Characteristics}

Characteristics of participants in the survey sample are presented in Table 1. Over half of participants (64\%) reported injecting in a public place in the past three months. Nearly three quarters of the sample were male (73\%) and two–thirds (66\%) were under the age of 50 years old. Over half of the sample was Latino (52\%). Less than one third was stably housed (29\%). Public injectors were significantly more likely to be male, under the age of 50, white, and unstably housed or homeless compared to private injectors.
There were several factors associated with public injection drug use. In the bivariate analyses (see Table 2), being male, under the age of 40, non-black, homeless or unstably housed, arrested or incarcerated in the past year were significantly associated with public injection. All measures of overdose (lifetime, past year, and witness) were also significantly associated with increased odds of public injection. The use of alcohol, heroin, or cocaine in the past 30 days were associated with public injection. While participants who were enrolled in methadone programs were 34% less likely to report public injection, participants who had bought methadone off the street or from a friend were 120% more likely to report public injection. Unlike methadone, being prescribed buprenorphine was not associated with decreased odds of public injection but increased odds, although not significantly. Having a primary care provider (PCP) decreased the odds of public injection by 64% compared with participants who did not have a PCP. Not surprisingly, having been admitted to the ER in the past year increased the odds of public injection drug use by 50%. Lastly, participants who reported sometimes having hallucinations were significantly more likely to report public injection.

3.4 Discussion
This is the first study in the US to focus specifically on public injection drug use. Our findings offer an enhanced definition of what aspects of a physical and social environment make a place public defined by PWID. They also contextualize the environment where injection drug use takes place and describe how injecting in a public place increases risk behavior. The findings offer a new and valuable perspective to inform future interventions and require both health, housing, and drug policy reform.
There are five main findings in this study. First, over half (64%) of the participants in the survey reported public injection drug use. Public injectors were significantly more likely to report homelessness and unstable housing, past year arrest or incarceration, overdose experience, alcohol use, heroin use, cocaine use, enrollment in a methadone program, taking methadone not prescribed, taking buprenorphine not prescribed, past year ED admission, and hallucinations compared with non-public injectors. Public injectors were also significantly less likely to report they had a primary care provider (PCP). In short, consistent with international studies, public injectors have a higher risk profile compared with non-public injectors. In the qualitative analyses, we identified four key themes associated with public injection; fear of arrest, level of withdrawal, fear and shame of ‘being caught’ or ‘seen’, and rushing injections. These findings expand upon Chapter 2, which identified that public injection was associated with receptive sharing of injecting equipment, by further illustrating the role of the physical and social environment that may result in risky injection practices. Our findings support the potential benefit of implementing SIFs in NYC. As described in earlier in this chapter, SIFs may minimize risky injection practices and fatal overdose by offering a sanctioned and supervised space for drug use. Furthermore, the implementation of SIFs may support existing health care reform efforts to connect high risk individuals to a usual source of care and, in turn, reduce preventable ED admissions. Acceptability studies have found that PWID would utilize a SIF if one were available. In addition to preventing new infections and reducing ED admissions, SIFs are cost effective. A recent study in San Francisco found that one SIF may save the city $3.5 million per year by averting new cases of HIV infections alone. Given that injection-related infections can result in longer and more costly hospital admissions, a SIF may
also contribute to cost savings by preventing SSTIs. The establishment of a SIF may minimize risks associated with public injection and provide a hub for high risk PWID to connect with other services.

Second, unstable housing is the strongest factor associated with public injection drug use. Nearly half (45%) of participants in the focus group sessions and over two-thirds (71%) of the participants in the survey reported they were unstably housed. While we found that some participants who reported they were stably housed injected in public places, unstable housing is the characteristic most strongly associated with public injection. In the qualitative sub-study, the majority of the participants were stably housed but reflected on recent instances of injecting in public places. Housing is a critical social determinant of health and may be a root cause of compounded health and social risks. Consistent with research on HIV prevention and risk behavior, unstable housing is associated with a myriad of health risks. These risks include risky injection practices, sexual practices, experiences of violence, mental health symptoms. Very practically, a person who is unstably housed does not have a consistent place to inject drugs or store sterile injecting equipment. In NYC, housing options for PWID are limited. Most services offered for homeless or unstably housed adults require ongoing abstinence from drugs and alcohol in order to receive services. Particularly in congregate housing settings for groups of people, abstinence is required in order to prevent disruptions and ‘contamination’ of other co-habitants who may be in recovery. However, we know that the ‘all or nothing’ abstinence-based approach to housing placement contributes to a cycle of homelessness for many. Housing First (HF) models, as opposed to the aforementioned ‘treatment first models’, aim to prioritize permanent housing as quickly as possible before supportive services.
HF models typically target homeless people with co-occurring mental health and substance use disorders and does not require abstinence. Studies have shown that HF is a cost-effective approach to engaging and retaining homeless adults in permanent housing, but is far from widespread.\textsuperscript{282} Given the risks associated with public injection drug use and high prevalence of unstable housing in this study, adopting and expanding HF models may be one strategy to reduce public injection drug use.

Third, PWID reported that fear of arrest as a primary factor taken into consideration when determining whether a place was ‘safe’ to inject. The quantitative analyses indicated that public injectors were twice as likely to report past year arrest or incarceration. Since our study is observational, we cannot infer causality. However, it may make the most theoretical sense that public injection increases the odds of arrest; if a PWID is injecting in public, they may be targeted by law enforcement. We added an additional survey question in the focus group sessions to inquire if, among participants who reported past year arrest, their arrest had been cited as public drug use; over one quarter (27\%) reported their arrest was cited as public drug use. This is consistent with other studies on syringe access; police presence and fear of arrest impede a PWID’s ability to obtain and store sterile injecting equipment and apply safe injection practices.\textsuperscript{94,211,283,284} In recognition of the existing drug policies and war on drugs in the US, approaches to reducing public injection drug use must be accompanied by drug policy reform. One approach is to decriminalize all drugs. In 2001, Portugal decriminalized all drugs. Contrary to initial opponent beliefs, drug use decreased and drug treatment uptake increased during the first decade.\textsuperscript{235–237} In the absence of decriminalization, strategies to promote diversion to support programs in place of arrest and incarceration may be more effective. The SIF in Vancouver was
one component of a municipal drug strategy based on four principles; harm reduction, prevention, treatment, and enforcement. The latter focused on promoting education, community safety, and cooperation with local law enforcement to direct PWID to the SIF instead of handcuffs. Similar initiatives in the US, including Law Enforcement Assisted Diversion (LEAD), have demonstrated success in early pilot programs. In tandem with HF models, addressing substance use as a public health issue instead of a criminal justice issue will promote engagement and retention in support services for PWID.

Fourth, PWID may choose to inject in public due to fear of overdose. While there was some discordance on whether or not injecting in a public place was ‘safer’ to avoid fatal overdose, we found that individuals who had reported lifetime overdose, past year overdose, and witnessing overdose were more likely to report public injection. There may be several explanations for this association. First, participants who are rushing injections in public places may be less likely to adequately prepare and review how much they are injecting. Another explanation may be that having experienced or witnessed an overdose may impact awareness or fear of overdose, and incentivize injecting in a public place to increase the odds of being found if they overdose. Several participants described public places as safer in this regard. Participants also described the extent to which a person was experiencing opioid withdrawal as being a key factor in determining where to inject. The most in withdrawal, the more likely to inject in a public place. Not surprisingly, heroin use and using methadone and buprenorphine not prescribed were associated with public injection drug use. While cocaine use does not cause withdrawal, it is likely significantly associated with public injection due to the increased frequency of cocaine injections and, in turn, injection episodes per day. Enrollment in a methadone program was
protective against public injection. Expanding access to medication assisted therapy (MAT) may be one strategy to minimize public injection drug use. MAT has been effective in reducing injection drug use to minimize injection-related risk but access remains limited due to limited availability of trained providers.\(^{135,285}\) Methadone treatment reduces both cocaine use and injection frequency, which may have implications for minimizing injection related risk.\(^{286}\) Lastly, having a PCP is associated with decreased odds of public injection while ER admission is associated with increased odds of public injection. In consideration of the recent healthcare reform initiatives in New York to prevent emergency room admissions and improve access to primary care, our study further describes that being connected to primary care may be another strategy to connect with PWID to reduce risk of ER admission.\(^{287–289}\) As we mentioned, the implementation of SIFs, HF models, and diversion programs are health and drug policy interventions that have been demonstrated to connect PWID with support services.

Lastly, this study offers a new definition of public injection drug use that is derived from narratives of PWID. What makes a place public is a combination of physical attributes and the social environment. The majority of participants spent time describing that control over a space is most central to whether or not it is private or public. The physical attributes, including having a lock or doors, were secondary and described as components obtaining control. Control was described as being able to take your time, knowing who to expect in a space, and generally being able to “relax” and “be yourself”. Several participants described that one benefit of injecting in a private place compared to a public place is not being judged by others. This is consistent with the international literature describing experiences of injecting in public.\(^{266,290}\) Participants also generally described having privacy and control as inconsistent in their lives. A general sense of
lack of control may be related to perceived self-efficacy, which is an important characteristic in promoting behavior change to improve health and wellness among PWID.\textsuperscript{291}

There are several limitations in this study. Our study is observational and cannot infer causality. We utilized convenience sampling for both the focus groups and survey and, therefore, may present a volunteer bias. Participants in this study were already connected to SEPs and may not represent the higher risk and disengaged PWID. However, these limitations may impact our findings in that they are only conservative estimates and actual risk may be higher among public injectors who are not engaged in any services. One of the primary strengths is the mixed-methods approach to inform the categories of place of injection drug use by PWID themselves. We were able to include additional variables beyond what we learned in previous research on the topic to determine differences in risk behavior based on narratives from the focus group sessions. The study design and inclusion of additional variables are an appropriate strategy to understand a complex phenomenon such as public injection drug use.

Conclusion

PWID are injecting in public places in NYC. Public injectors are associated with a higher risk profile compared with non-public injectors. The reasons for public injection are complex and involve a combination of inadequate access to housing, stigma, fear of arrest, and fear of overdose. PWID are aware of how to apply safe injection practices but report that they are unable to do so under the existing circumstances. Solutions to minimize public injection drug use are complicated and involve reform of existing health policies, drug policies, and housing.
policies. SIFs offer an evidence-based approach to address many of the reported contextual issues related to applying safer injection practices. In light of the hepatitis C and overdose epidemics, it is critical to explore the implementation of SIFs and take steps to reform existing health, drug, and housing policies to reduce risks and costs associated with injection drug use.

3.5 References
To be formatted in individual articles

3.6 Tables and Figures
Table 3A. Sample characteristics and a comparison of participants reporting public injection drug use among PWID in the IDUCS survey (n=755)

<table>
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<tr>
<th></th>
<th>Total</th>
<th>No Public Injection</th>
<th>Public Injection&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Chi-Square</th>
<th>p-value</th>
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<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
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<td><strong>TOTAL</strong></td>
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<td>187</td>
<td>68%</td>
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<td>Female</td>
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<td>32%</td>
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<td>20</td>
<td>7%</td>
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<td>15%</td>
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<td>23%</td>
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<td>138</td>
<td>50%</td>
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<tr>
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<td>6%</td>
<td>16</td>
<td>6%</td>
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<td><strong>Housing Status</strong>&lt;sup&gt;b&lt;/sup&gt;</td>
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<td></td>
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<td>42%</td>
<td>100</td>
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<td>218</td>
<td>29%</td>
<td>142</td>
<td>52%</td>
<td>76</td>
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</table>

*** p<.001 ** p<.01 * p<.05

<sup>a</sup>Public injection is defined as having injected in one of the following places in the past three months: street or park, stairwell, abandoned building, public bathroom, bus/train/subway, car or vehicle, SEP bathroom, or shooting gallery

<sup>b</sup>Housing status defined as homeless (street homeless), unstable housing (jail, prison, rooming with others, shelter, temporary housing, hospital, drug treatment), stable housing (own home or live with friend/family member)
Table 3B. Bivariate associations between participants characteristics and public injection drug use among PWID in the IDUCS (N=755)

<table>
<thead>
<tr>
<th>Participant Characteristics</th>
<th>Number reporting public injection(^a)/N with Characteristic (%)</th>
<th>OR</th>
<th>95% CI</th>
<th>p-value</th>
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<td>1.03-1.98</td>
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<td>Female</td>
<td>119/207 (47.8)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Age***</td>
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<td>208/268 (77.6)</td>
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<td>1.95-3.84</td>
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<td>40 or older</td>
<td>272/487 (55.9)</td>
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<td>Latino</td>
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<td>260/379 (68.6)</td>
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<td>No</td>
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<td>95% CI</td>
<td>p-value</td>
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</tr>
<tr>
<td>Methadone Program Enrollment**</td>
<td>Yes</td>
<td>268/449 (59.7)</td>
<td>0.66</td>
<td>.48-.89</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>212/306 (69.3)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Methadone Not Prescribed**</td>
<td>Yes</td>
<td>82/105 (78.1)</td>
<td>2.26</td>
<td>1.39-3.68</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>398/650 (61.2)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bupe Prescribed</td>
<td>Yes</td>
<td>26/34 (76.5)</td>
<td>1.91</td>
<td>.85-4.28</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>454/721 (63.0)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Bupe Not Prescribed*</td>
<td>Yes</td>
<td>32/39 (82.1)</td>
<td>2.74</td>
<td>1.19-6.28</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>448/716 (62.6)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Have a PCP***</td>
<td>Yes</td>
<td>140/249 (56.2)</td>
<td>0.37</td>
<td>.23-.59</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>109/140 (77.9)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>ER Past Year**</td>
<td>Yes</td>
<td>265/389 (68.1)</td>
<td>1.50</td>
<td>1.11-2.02</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>215/366 (58.7)</td>
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**Mental Health**

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<tbody>
<tr>
<td>Depression</td>
<td>Often</td>
<td>170/261 (65.1)</td>
<td>1.14</td>
<td>.81-1.60</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>115/180 (63.9)</td>
<td>1.08</td>
<td>.74-1.58</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>195/314 (62.1)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>Often</td>
<td>191/298 (64.1)</td>
<td>1.07</td>
<td>.76-1.50</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>112/174 (64.4)</td>
<td>1.08</td>
<td>.73-1.60</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>177/283 (62.5)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Hallucinations*</td>
<td>Often</td>
<td>22/34 (64.7)</td>
<td>1.11</td>
<td>.54-2.28</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>52/69 (75.4)</td>
<td>1.85</td>
<td>1.05-3.28</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>406/652 (62.3)</td>
<td>-</td>
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*** p<.001  **p<.01   *p<.05

\(^a\) Public injection is defined as having injected in one of the following places in the past three months: street or park, stairwell, abandoned building, public bathroom, bus/train/subway, car or vehicle, SEP bathroom, or shooting gallery

\(^b\) Housing status defined as homeless (street homeless), unstable housing (jail, prison, rooming with others, shelter, temporary housing, hospital, drug treatment), stable housing (own home or live with friend/family member)
### Figure 3A: Key themes and sample excerpts related to public injection versus private injection

<table>
<thead>
<tr>
<th>Key Theme</th>
<th>Sample Excerpts</th>
<th>Relationship to Outcome Variable Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fear of Arrest:</strong></td>
<td>Participants most often described rushing injections in the context of avoiding arrest or being ‘seen’ or ‘caught’.</td>
<td>Public Injection</td>
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<td></td>
<td>“Their past, their inhibitions, their drugs, they don’t give a shit where they inject, anywhere is safe for them as long as they don’t get arrested. That’s what makes it safe. Not getting arrested, so you can actually get that shot in that you’re trying to inject.”</td>
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<td>“[discussing a public bathroom] You know, you take a long time, you got people knocking on the door cause they’re waiting to use the bathroom and then like she said you can hit yourself in the wrong place, and you take even longer in there cause you know somebody’s waiting outside and you get all nervous”</td>
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<tr>
<td><strong>Overdose:</strong></td>
<td>Participants described overdose as a risk they considered based on where they were injecting. However, there was not consensus whether there was higher or lower risk of overdose in a public places or a private place.</td>
<td>Private Injection</td>
</tr>
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<td>One participant described a public bathroom or syringe exchange program bathroom as being protective against fatal overdose:</td>
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<td>“[speaking about a bathroom with multiple stalls]… alright so you could say it’s a little bit more safer because someone could actually help you if something did happen… that’s the only thing that I can think about because there are people around that could actually help you if you OD”</td>
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<td>“Well, the bathroom here [Syringe Exchange Program] you’re safe, because they check up on you. So, you safe, like, if you’re in your house and you shoot up in your house and nobody knows you shoot up in your house, you use and you OD...how they hell do they know that you OD, they don’t know that you use drugs,”</td>
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they say “wait a minute man, this guy been here more than this should take (knocking noise) they say “You ok?” (knocking sound)... there’s NARCAN right outside”

In the same group, another participant described that the risk of fatal overdose can be just as high in a public place, even if there are bystanders around due to fear of arrest:

“...And every time I used to go to the [park], and people were there smoking or whatever, they used to run out, they didn’t wanna be by when I was there, cause if I did OD and die, they didn’t wanna be an eye witness or nothing, they used to run out...”

<table>
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<tr>
<th><strong>Drug Treatment &amp; Withdrawal:</strong></th>
<th><strong>Public Injection</strong></th>
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<tr>
<td>Participants also described the level of opioid withdrawal a participant was experiencing, also referred to as “dope sickness”, was an important in-the-moment consideration for where people injected drugs. Participants described tactics to avoid dope sickness, including buying methadone or buprenorphine if they were unable to procure their drug of choice. The more dope sick a PWID was, the more likely they were to inject in a public place.</td>
<td>“how am I supposed to focus on anything I’m supposed to do if I’m spending two hours in the morning trying to get straight...then the rest of the day I’m just trying to feel normal and not let anyone see what I’m doing. It’s exhausting...”</td>
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| **Fear and Shame of Being ‘Seen’ or ‘Caught’:** Participants in every group discussed the importance of avoiding injecting in public so others would not “need to see that”. There was a lot of concern related to being seen by children, or others injecting in public and leaving discarded syringes. Several participants described attempting to prevent others from injecting in places where there was a high likelihood of | “... sure, if I had those pills, the one’s that go under the tongue, I might keep one of them just in case... my friend has some, I know where to get them, its not that hard... but only if you can’t cop...” |

<table>
<thead>
<tr>
<th><strong>Public Injection</strong></th>
<th><strong>Public Injection</strong></th>
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<tbody>
<tr>
<td>“… there’s some people that just look at you like, wow, there he goes just not caring and throwing his works over there… I try to avoid using anywhere where’s there be kids at… they don’t need to see that, don’t need to see me disgusting and doing bad things.”</td>
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being seen by children. The tone in all sessions when describing children or the perception of the general public was somber and slow. Often in the same breath, participants would describe the shame or guilt they felt about injecting in public places.

“...you know, I never wanted to do this but I do and now people see me like a menace in society, running around not giving a shit, can’t take care of myself... I wouldn’t want to see me either in their neighborhood... more and more every day I think maybe it’s getting better and then BAM I’m right back there injecting out there...”

**Rushing Injections:** Participants described both anxiety related to injecting in a public place, being hurried and/or “paranoid” or “scatterbrained” because of the fear of arrest or being seen. Participants also described that they were unable to focus and take the time they needed to prepare and and safely administer an injection. This was mentioned several times in the context of also storing previously used injecting equipment to avoid arrest versus going to a syringe exchange to get clean syringes.

There was very little unprompted discussion related to access to syringes, reuse of injecting equipment, and general risk of bloodborne pathogens. However, when prompted to describe if there were differences in access to supplies or ability to prepare an injection, participants consistently shared that injecting in a public place means rushing injections:

“doesn’t let you focus on that – it takes a back seat if you worried about the police...all you’re thinking about is get your hit without getting hit up”.

“here at the [site name] they got everything you need... in the bathroom you can take your time... when you’re out there on the streets, sometimes in between cars or whatever, the last thing I’m thinking about is using those cookers and ties because shit I don’t got time for that if somebody be watching me...”

**Public Injection**
Chapter 4: Calculated risks and trade-offs: the experience of public injection drug use and attitudes towards supervised injection facilities

4.1 Introduction
The population of people who inject drugs (PWIDs) is growing. New York City (NYC) has the largest population of PWIDs in the United States (US).\textsuperscript{61,189,226} PWIDs are at risk for a variety of adverse health outcomes; transmission of HIV and viral hepatitis C (HCV), bacterial infections, endocarditis, abscesses, and opioid overdose. At a time when overdose rates are at an all-time high and new outbreaks of HIV and viral hepatitis C (HCV) attributed to injection drug use, the need for expanded evidence-based interventions and new initiatives to address injection-related harm is critical.

In New York City (NYC), there are approximately 105,000 PWID.\textsuperscript{176,245} A recent study found that 64\% of PWID surveyed reported that they had injected in a public place in the three months preceding the survey. PWID that inject in public places (i.e. street, parks, public restrooms) report higher risk behavior than PWID who do not inject in public places (i.e. own home, residence of a friend or family member).\textsuperscript{150,212,229} Public injectors tend to be younger, homeless or unstably housed, and are more likely to report they had witnessed or experienced and opioid overdose in the past year (Chapter 3). They are also more likely to report that they had been arrested or incarcerated in the past year. Public injectors are also more likely to report they had been admitted to the emergency department (ED) in the past year, but less likely to have a regular source of primary care. Beyond these health risks, PWID who inject in public report experiences of shame and internalized stigma.\textsuperscript{103,169,173}
In addition to the health and social consequences of public injection for PWID, there are health and safety ramifications for the community at large. First, public injection drug use is associated with increased presence of improperly disposed injecting equipment, including syringes. Used syringes in parks or public trash receptacles may result in an accidental needlestick injuries which may lead to the need for post-exposure prophylaxis, which can be expensive and cause adverse side effects. PWID may leave improperly discarded injecting equipment behind due to fear of arrest for carrying injecting equipment with drug residue. Syringe possession laws vary by state and municipality and create a barrier to obtaining and returning injecting equipment to hazardous waste collection sites. Second, the consequences of risky injection practices may lead to preventable abscesses and wounds that are often treated in the ED and result in costly hospital stays. In one study, a public hospital found that injection-related infections accounted for $11.5 million in overall hospital costs. Further compounding cost, if a PWID contracts HIV or HCV, the average lifetime cost of treatment for HCV is $64,490 (depending on the genotype) and $379,000 for HIV. The majority (90%) of participants of syringe exchange programs (SEPs) in NYC receive publicly funded insurance. Minimizing public injection drug use has potential life and cost saving benefits for PWID and the communities in which they reside.

In the US, the unprecedented increases in opioid overdose and new cases of HIV and hepatitis C among younger injectors is sparking a national discussion about the efficacy of existing drug policies and interventions. Several states of authorized SEPs as a result of declaring public health emergencies due to new outbreaks of HIV infection attributed to injection drug use. In early 2016, the long-existing ban on federal funding for syringe exchange programs was
lifted.\textsuperscript{147,297} While SEPs are included as a key component in both state and federal HIV and HCV prevention guidelines, they do not address the issue of public injection. Public injection drug use has been effectively minimized in over 100 cities around the world by implementing supervised injection facilities (SIFs).\textsuperscript{149} SIFs are sanctioned spaces where PWID may bring their own pre-obtained drugs to inject under the supervision of healthcare staff. SIFs aim to reduce public injection and, in turn, reduce risky injection practices that lead to HIV, HCV, and bacterial infections, fatal overdose, and connect PWID with support services. Research has documented that SIFs effectively address all of the above and save money.\textsuperscript{153,170,171} Contrary to what opponents posed as potential threats before the establishment of a SIF, they do not increase crime, public nuisance, or drug use.\textsuperscript{153} PWID who access SIF services are twice as likely to enter drug treatment compared with PWID who do not access SIF services.\textsuperscript{162,229,298}

In the past year, several cities have started to introduce legislation and funded feasibility studies to authorize the establishment of SIFs.\textsuperscript{299–302} Medical professionals, researchers, and elected officials have written about the potential benefits of implementing SIFs, particularly in response to the growing opioid overdose epidemic. One recent study estimated that San Francisco would save $6 million per year by averting new cases of HIV if one single SIF were established.\textsuperscript{177} Some SEPs are already operating as de-facto SIFs, operating the bathrooms on the premises as underground pseudo-injection sites.\textsuperscript{303} While there is no law prohibiting the establishment of a SIFs in the US, a complex set of federal, state, and municipal policies and laws serve as potential barriers to opening and operating a SIF without fear of prosecution.\textsuperscript{304}
One of the key questions to answer as the US considers establishing SIFs is whether PWID would use such services. Prior to opening SIFs in other countries, studies showed that PWID overwhelmingly reported that they would use a service if it were available to them.\textsuperscript{152,166,305} Perceived impacts on how a SIF would change their injection practices include beliefs that they would increase the likelihood of hand washing before and after, using sterile supplies, and not rushing injections.\textsuperscript{305–308} Acceptability of using a SIF across these pre-implementation studies is high, with over 86\% reporting they would use a SIF if it were available.\textsuperscript{150,165,309} Post-implementation, the SIF in Vancouver, Canada has supervised over one million injections and had not resulted in any overdose deaths.\textsuperscript{171}

In the US, research on feasibility and acceptability of a SIF is limited. One study of PWID who inject prescription opioids in Rhode Island indicated that 63\% would use a SIF if it were available\textsuperscript{310}; and earlier study of PWID in San Francisco indicated 85\% would use a SIF, and 75\% of those individuals reported they would use it at least three times per week.\textsuperscript{178} Willingness to use a SIF was associated with recent homelessness, accidental overdose, heroin use, non-medical use of fentanyl, and using prescription opioids alone.\textsuperscript{310} There have yet to be any studies on SIF feasibility in New York, home to the largest population of PWIDs.

In this study, we aim to understand and describe the experience of public injection drug use among PWID enrolled in SEPs in NYC. We also describe initial attitudes towards the concept of a SIF, how a SIF many change their current experiences injecting drugs, and whether they would use a SIF if it were available to them.
4.2 Methods

4.2.1 Participants

The study was conducted in July 2015 in two syringe exchange programs (SEPs) in NYC. We conducted five focus group sessions at two different SEPs in NYC. We recruited participants using convenience sampling in the drop-in centers of both SEPs during times when syringe exchange services were offered. We promoted the focus groups the day of the focus group session to capture individuals who were representative of receiving services on a weekday afternoon. Eligibility criteria included 1) currently enrolled as a participant of the SEP, 2) over the age of 18-years old, 3) ability to speak English, 4) ability to provide written, informed consent, and 5) report injection drugs in the past three months preceding the focus group session.

The lead researcher and research assistant met with participants individually to determine eligibility and describe the purpose of the focus groups. Eligible participants provided written informed consent, read aloud by the research team member to ensure clarity. Consented participants were assigned to a focus group session. No focus group session permitted more than 8 individuals and ranged from 5 to 8 participants. Participants were given a $10 gift card for their time. This study was approved by the Institutional Review Board at the City University of New York City College.

4.2.2 Study Sites

One of the SEPs has a 21-year history of providing syringe exchange services to PWID in Manhattan and the Bronx via street-based and mobile-unit outreach. The other SEP has been in operation for less than half of the time (8 years) and services a smaller geographic area in
Northern Manhattan only. Both organizations offer drop-in center services, care coordination, onsite HIV and hepatitis C testing, and have bathrooms available for participants of the program.

4.2.3 Focus Group Procedures

The lead researcher facilitated all of the focus group sessions with assistance provided by a research assistant. Both individuals have experience facilitating groups with PWID in NYC and with syringe exchange services. The research assistant took notes on participation of each participant and general a priori themes discussed prior to the session. Once the focus group sessions commenced, participants were asked to complete a 14-item survey with measures taken from the Injection Drug Users Health Alliance Citywide Survey (IDUCS). The lead researcher read allowed each question one at a time and allowed time for participants to complete their response. The research assistant provided assistance if an individual participant had questions. Next, the lead researcher described her experience working in syringe exchange programs and interest in understanding the issues that PWID had related to injecting in public places. The session followed a semi-structured guide that was developed by the research team and an external qualitative researcher. The sessions were comprised of four sections: 1) discussion of risk by place of injection drug use using photos of local places known to have injection drug user, 2) a narrative presenting a vignette to discuss factors that influence where a PWID injects, and 3) a one-minute video of a participant accessing services at a SIF for discussion. Focus group sessions were approximately one-hour long. All sessions were audio recorded.
4.2.4 Specialized Session

Upon review of the survey results from the first four focus groups compared to the IDUCS, it was identified that the mean age was higher (48 years of age) for the focus groups sessions compared to the IDUCS 2014 report (44 years of age). For this reason, the recruitment of the fifth session focused on recruiting individuals under the age of 30. Using snowball sampling, one younger participant recruited other individuals under the age of 30 to participate in the last group session, which reduced the median age to 44-years to be more reflective of the city-wide participant demographics of syringe exchange programs.

4.2.5 Data Analysis

Audio-recorded files were transcribed and reviewed for accuracy by the two researchers. Both the audio and written transcriptions of the focus groups using web-based software within two weeks of all of the sessions using Dedoose™. Using a multi-step process, we used thematic analysis to analyze the focus group data. Each researcher reviewed the transcripts independently to identify general themes that were related to the study topic. The team discussed the overall impressions, differences between groups, and any initial impressions related to differences by site. We used grounded theory to develop a coding schema to identify major key themes. We agreed upon an initial coding schema and reviewed the transcripts again applying thematic codes. Then, we met again to discuss the presence of themes, constructs to define themes, and collapsed several themes with sub codes. We developed consensus through discussion, mapping out key themes and the presence or absence of themes by group, site, and demographic characteristics. The lead researcher selected three individuals to conduct member checks, presenting the definitions and understanding of themes related to public injection drug
use. Each of the members validated that the key themes related to public injection and risk reflected their experiences. One of the participants who presented a particularly complex narrative about weighing risk was included in the member checks to ensure that the excerpt and narrative reflected his experiences.

4.3 Results

4.3.1 Sample Characteristics

Over three-quarters of the participants were over the age of 40 years (75.8%) with an average age of 44, ranging from 21 to 57 years of age. Over half of the participants were male (54.5%) and nearly half of participants identified as Latino (45.5%). Most participants reported having their own place in the past three-month period (54.5%), followed by over one third reporting temporary or unstable (36.4%) and a few who were street-homeless (9.1%). Almost half of participants had reported being arrested in the past year (48.5%), with over one quarter reporting the arrest was cited as public drug use (27.3%). [See Table 1]

4.3.2 Drug Use & Risk Behavior

The majority of participants reported heroin use (88%) in the past three months, followed by methadone (73%) benzodiazepines or ‘downers’ (49%) and/or alcohol (49%). Most participants had been tested for hepatitis C and HIV (97% and 94% respectively), and over one third reporting a positive hepatitis C diagnosis (34%) compared to one individual reporting they were HIV positive (3%). Over half of participants had survived an overdose in their life (53%), over a quarter reporting self overdose in the past year (28%) and the majority witnessing an overdose in the past year (72%). Less than a third of participants reported the sharing of injecting equipment,
including sharing of a syringe (22%), a cooker (28%) and/or a cotton filter (28%). [See Table 1 & 3]

4.3.3 Place of Injection Drug Use

The two most common reported places of injection drug use in the past three months were the street or park (32.3%) and own home (32.3%), followed by home of a friend/family/partner (19.4%) and syringe exchange program bathroom (16.1%). When reviewing whether a participant had ever injected in a particular location over the course of the past three months, a majority report injecting a syringe exchange program bathroom (69.7%), own home (66.7%), and/or the home of a friend/family/partner (57.6%). [See Table 2]

4.3.4 Group Interaction

Participants readily shared their experience with injection drug use with the research team and fellow participants. There was a general sense of familiarity among the participants in all sessions, often referring back to experiences they had injected together in the past or describing places of injection that were local. Participants were actively engaged and there was only one participant who participated minimally. In general, participants appeared to be enthusiastic to discuss the challenges of injection drug use and readily offered solutions and strategies to avoid arrest, overdose, and injection related risks. There were no notable differences by group or socio-demographic characteristics related to participation. The sessions were lively, engaging, and appeared to be enjoyable.
4.3.5 Key Findings

**Finding 1: Finding a space to inject involves calculated risks and tradeoffs: getting beat up, ripped off, arrested, or die alone**

Public injection was defined as a place where a PWID has a low sense of control of who can access the space and how long they have to prepare, administer, and clean up after an injection. A description of how PWID define privacy and risks by type of location are described in a previous study (Chapter 3). Examples of public places include the street or park, stairwells, abandoned buildings, syringe exchange program bathrooms, and subway stations. After being shown a series of photos of places where PWID are known to inject, the primary risks identified included (a) fear of arrest, (b) fear of overdose, (c) general lack of time to prepare and administer an injection, (d) being seen by the general public or friends that do not know they inject, and (e) general sanitation of a space.

One of the differences across the groups were related to increased risks for women who are injecting in public places. Both male and female participants described that certain places “may be safer for me but I wouldn’t tell my girlfriend to go there without me”. Several participants described stories related to hearing or experiencing violence, being robbed, or being raped in public places that were more hidden from general public view.

“...I got my privacy down there so I take my time and relax... but you know, like (NAME) was just there and some dude hit her on the head with a rock and robbed and raped her... I don’t go
there anymore, no matter what… its good maybe if you have other people so you don’t get
arrested by the church… but if I’m alone, it’s gotta be somewhere people can hear me scream at
least…”

Other risks that were discussed but in less detail were related to experiencing mistrust in other
PWID, worrying about needing to inject others, share drugs with others, or PWID accidentally or
purposefully sharing equipment:

“…why would I go to a friends house knowing I’m going to have to hit the friend off too? And I
just got my shit, I need my fix”

“… they [other drug users] could have used your stuff behind your back, that’s true, when you
were gone, you know and that true and they can give you some disease, and that’s another
unsafe thing…. Like maybe when you left to the store, maybe they don’t act like they’re junkies
but they are behind you back and, bop, they stick it up and have some type of disease, and you
get it when you use your equipment.”

In consideration of these risks, many of the shared experiences involved elaborate planning to
find a place to inject. This included rotating which public restrooms they inject in throughout the
day to avoid being kicked out of businesses, being rushed out of a space due to police presence,
and losing drugs and injecting equipment due to a lack of stable space to inject. Participants
described hiding or running away from the police by going into parks or highway underpasses to
ensure they were able to administer their injection. One participant’s explanation of choosing a
place to inject where there are known improperly discarded syringes in order to avoid contact with police:

“... Now, I see the black car, the undercovers, you know? Now, the tree will cover you. But your shoulder, lets say my shoulder right, they see it there and get out the car, so um, one of them says, “no, you can’t go there look at all those needles there” and the other guys says ok, then there “no but there are too many branches there, he’s gonna hear us coming” but I’m watching them, they find a spot where to come up, so as they’re coming up I got the needle in my hand, I was getting off. I’m running with the damn needle in my hand. Now I start running to the tree, there’s a big garbage can right? I’m hiding like this, getting off, trying to get that hit, they run right by me, they aint even see me, right? So I get the hit, I’m there in the corner of Amsterdam, right, now, they walking back, right? I took off my jacket, you know, cause they knew the color of the jacket, so I get up, I got a good hit, I take the works, break the needle off, put it in the garbage can, they walk right by me and say “hey, you little pecker head, we know you’re there in the bushes, we can see you” and I’m like right next to them, and they say if I catch you, I’m gonna whoop your butt...”

This particular excerpt demonstrates intricate planning and attention to detail. Many of the narratives throughout the sessions included similar themes of planning in great detail. It is clear from the excerpt above that the individual is well aware of the potential risks of getting arrested, places where they can inject to avoid the risk, and the planning that goes into preparing one injection.
While injecting in a private place may decrease fear of arrest, it may increase the fear and likelihood of an accidental overdose. Participants described weighing these risks:

“… you have to really really think about the big picture. The small picture is, yeah, you get hit up for this or that and they lock you up. Or do you hide, go over there by yourself crouching down so nobody can see you doing your hit... and then you’re gone. You’re a gonner... that’s the big picture of life. You gotta think about that all the time, every day.”

On participant describes a tactic for avoiding both arrest and overdose:

“… I started to do this thing, right, where down there on 167 I go into the bushes... yeah! You know the bushes over there, they can’t see you there. So, I get my stuff, I get my hit down there... so they can’t see me... but then I walk up and sit on the steps so if I catch an overdose, they see me right there and maybe they call 911...”

Participants also described trade offs related to avoiding having to share drugs with other people, being able to take their time injecting, and having access to a sink to clean up. There was also themes and gestures (i.e. shaking heads, expressions of exhaustion and stress) describing all of the considerations and actions taken for every injection. One participant said that the constant weighing of risks was tiring and impeded the ability feel “like I can have a normal life”.

Finding 2: PWID consider the community and public perception
While there were some comments about general belief in the public being responsive to an overdose, a general expression of shame and disempowerment was consistent across groups. The expression of shame related to public injection drug use was particularly specific to avoiding injecting, self or observed, in front of children:

“It’s really disrespecting yourself, but kids, that’s the main thing I look at...”

“And you know what, I don’t want my children seeing that... mommy, mommy there’s a man putting a needle in his arm over there... I mean, come on! Children don’t need to be subject to that”

“It looks like a nice area and I think people will call the police, especially if there are children, I know I would if I see someone getting high on a bench and I have small children? Not in my area...”

Participants were also aware of the impact of public injection related to improperly discarded syringes. Several participants went so far as to describe instances where they intervened to prevent other PWID from leaving improperly discarded syringes in the community:

“... I was going down in 116th, and the guy was leaning on the gate all the kids are out there going like this, so I took three feet away from him made me turn around, “yo bro, yo bro, there’s kids right down there behind you man” ... I did that again “yo bro! yo bro! There’s kids right
“Well the thing is the safest place is here [syringe exchange program bathroom], cause they’re always checking you in the bathroom”
Injecting in a bathroom of a syringe exchange program was described as the safest because it had minimal risk for arrest and maximum protection from fatal overdose due to trained staff members.

The salient theme of calculated risks and trade-offs (Finding 1) appeared in the discussions of each of the seven places where we discussed “safe/unsafe” characteristics for injection drug use. Of all of the places, participants expressed identifying the least amount of both health and social risks in a syringe exchange program bathroom. It is recognized among harm reduction providers that participants inject in the bathroom of programs. Several programs have implemented overdose response structures, including staff trained to use the opioid overdose antidote called naloxone. Bathrooms may also include hazardous waste containers for safer disposal, safer injection supplies, or an intercom to communicate if there is an emergency. The two sites where the sessions were conducted included all of the aforementioned features. The following excerpts describe experiences using the syringe exchange program bathroom for injection drug use:

“Yeah, I think its safer than in your own house, cause when I’m home, I’m by myself, so if I OD I’ll probably die right there, here I think is the safest place there is”

“Here people I mean I’ve been watching, I mean I used to do it at home... I had tried to teach her [mom] how to use clean so I play safe where I know there’s NARCAN they know how to bring me back and this is a place where everybody knows me so...”
“They got the box to throw the syringes, throw the cooker, right, not on the floor and make sure there’s no blood on the floor because that blood is infected somebody else could get infected to, so if you drop a needle and you forgot make sure you go back and pick it up yourself cause nobody gonna pick it up for you”

“It’s a change, you know, around ... you get clean syringes, you got everything, all around the board to use it here in the bathroom is the safest place, I always said that”

“You can focus, you can throw [away] your dirty needles...”

As discussed in previous findings, the concept of privacy as a benefit has expressed value for preventing certain risks and, in other cases, promoting risk. In a SEP bathroom, the risks of arrest, fatal overdose, sharing of equipment, violence, and “people knowing what you’re doing” are reduced. In the context of increased privacy directly competing with the risk of fatal overdose, SEP bathrooms seemed to address both risks.

Finding 4: SIFs would address many of the risks related to public injection and PWID would use them if available

“You got me and all my friends lining up around the block for that... just let me know when its open”
Participants were shown a one-minute video of a participant accessing services at a supervised injection facility, from entering the site to collecting drug preparation equipment to injection to disposal. There was no explanation of the evaluation of the SIF related to individual and community benefits for the purposes of only demonstrating what the facility offered from a participant’s perspective of service access. After finishing the video clip, participants were asked to share what their reactions were to the video clip. Responses were overwhelmingly positive manner across all groups, and in some cases participants expressed frustration that the services were not available to them now:

“Wow! That’s so different! We need that here! (clapping)”

“Why don’t we have one?”

“What the hell, we aint got that here”

“That make me feel a little jealous”

“They’re tying her off? That’s a medical or physicians assistant or nurse... wow, I want a job there.”

“Yeah! We aint got nothing like that! We need that here! We need that here! I would talk about that and bring it up in the next conference meeting we have on Tuesday”
After discussing initial reactions, participants were asked to share what would be different in their own direct or observed experiences if a supervised injection facility were available to them. Specifically, what health and social risks would be minimized if a SIF were available (see Figure 4A). They believed that SIFS would minimize risky injecting practices because they would not be fearful of being arrested or overdosing alone. During the video clip, in most sessions a participant would comment on a scene where a participant of a SIF was able to wash her hands first followed by a medical professional assisting her with a tourniquet at a private, hygienic booth. The monitoring of the space was overwhelmingly viewed as positive, particularly as it related to preventing fatal overdose. Consistent with the earlier discussions about fear of arrest when injecting in a public place, participants commented on the impact it may have on their engagement with law enforcement. Participants also discussed the benefits of protecting themselves from overdose and other injection-related risks. While not as strong of a point of discussion earlier in the sessions regarding avoiding arrest and overdose as primary concerns, participants discussed the relationship between a safer space and prevention of missed injection and blood-borne infections.

Participants were asked if a SIF were to open whether they thought people would use it, and the overwhelming majority expressed it would be well utilized and brought up the previously discussed risks, including avoiding injecting in front of children and preventing transmission, to support their opinions. However, participants, unprompted, discussed that they had doubts that the service would be available in NYC. Consistent with the themes of internalized stigma and negative public perception of PWIDs, most participants were skeptical if not adamant that SIFs would ever be available for use:
“Participant 1: Never ever ever …Cause what I think if they did that here...
Participant 2: ‘cause that would give us more power”

“But I’d like to say that is never… that’s you don’t show that no more cause its never gonna happen in New York City cause New York City is money money money, the police, everybody jail the judges, programs… it will never happen here. New York is about money. That would never happen here, never ever ever ever ever never…but a place like that is a beautiful thing…”

While participants articulated their enthusiasm and theoretical impact of a SIF in NYC, there was very little response or belief that this service would be integrated for use anytime soon.

4.4 Discussion

Our findings offer a deeper understanding of the complex experiences of PWID trying to manage risks related to injection drug use on a daily basis. They also describe the initial attitudes towards SIFs and their initial commentary on how they may address the risks of public injection drug use.

We presented four key findings in this article. First, PWID are calculating social and health risks for every injection, many of which have potentially fatal outcomes. Previous research has made the connection between fear of arrest and the ability to apply safe injection practices due to rushing injections or reusing injecting equipment. Our study expands the understanding of other factors that may impact the ability to apply safe injection practices; the fear of violence and accidental overdose are risks included in the calculation of what makes a place ‘safe’ for injection drug use. Participants described in detail the various considerations taken into account
when identifying a safe place to inject, going so far as to inject in a public yet secluded place behind bushes to avoid being seen or arrested and later making themselves visible in case they accidentally overdosed. There are several health policy considerations to take away from these findings. First, the persistent fear of arrest and potential incarceration impede the ability of PWID to practice safe injection practices. As long as drug use is treated as a criminal justice issue resulting in arrest instead of a public health issue resulting in referrals to supportive services, existing evidence-based public health interventions can only go so far. Drug policy reform that includes decriminalization of drugs and diversion programs direct PWID to treatment instead of prison. Second, PWID are managing competing priorities that often work against each other. Public places were seen as safer in the event of preventing accidental overdose. Research validates this concern; 75% of accidental overdoses happen in the home in NYC. This may also explain findings in Chapter 2 and 3 about why PWID with stable housing continue to report public injection drug use. In recent years, New York has adopted policies and reformed existing legislation to support overdose prevention. These include (a) the 911 Good Samaritan Law, which holds bystanders harmless for calling 911 even if they are intoxicated or are holding illicit drugs and (b) equipping law enforcement with naloxone, an opioid overdose antidote, in recognition that they are often the first responders on the scene of an overdose. Lastly, drug policy reform and health policies do not address the issue of potential violence. Particularly for female gender identified PWID, violence will continue to persist unless they have a supervised place for drug use or their own housing. Many shelters and transitional housing programs require sobriety, often validated through frequent drug tests and outpatient drug treatment requirements. For PWID who are not ready or willing to stop using drugs, access to affordable and stable housing will be a challenge. In order to minimize public injection drug use
and the associated harms, strategies must include drug policy, health, and housing policy reforms.

Second, PWID are conscientious about injecting in public, particularly in front of children, and prevent others from doing the same. We identified this as a key theme throughout all of the focus group sessions and was particularly notable since it was not included as a discussion point in the original facilitators guide. In short, PWID do not want to be injecting in public. The rich narratives describing the shame and awareness of injecting in public contradicts the widespread stereotype of an injection drug user “junkie” who is careless and unable to think about anything except getting high. On the contrary, our study demonstrates that PWID are both capable and strategic about managing risks to themselves and others. These findings have important implications for understanding behavior change and interventions to reduce injection-related risk. SEPs rely on a PWID’s ability to apply safe injection practices outside of the program. The PWID in this study expressed knowledge and understanding of safe injection practices and the importance of using sterile injecting equipment, but the environment in which they inject interfered with their ability to apply safe injection practices. These findings further support the need for drug, health, and housing policy reform, but also contribute to the rationale to immediately implement SIFs in the interim to address immediate risks.

Third, we learned that PWID are injecting in SEP bathrooms because they were perceived as the safest option. Participants commented on the benefit of having all of the sterile injecting equipment and disposal access onsite, privacy that minimize fear of arrest or violence, yet not too secluded to the point where an accidental overdose would not be identified quickly. In 2016,
in response to recurrent onsite overdoses in SEPs, the New York State Department of Health (NYDSOH) issued new regulations requiring SEP bathrooms to make physical space modification and develop training for staff to effectively respond to overdose incidents.\textsuperscript{317} While SEPs appear to be operating de-facto SIFs, injection drug use that may be occurring onsite is still unsupervised; overdoses are responded to only after they have occurred compared with SIFs that can identify early signs of overdose and apply preventative measures (i.e. administration of oxygen) to avoid the use of naloxone or injuries sustained from losing consciousness. Extended hypoxia can also result in permanent brain injuries.\textsuperscript{318} SEPs bathrooms may prevent overdose fatalities and drug-related arrest, but risky injection practices and preventable overdoses would be largely minimized by supervision.

Lastly, the overwhelming majority of PWID expressed willingness and interest in using a SIF if it were available to them. For the reasons described above, public injection drug use is not desirable for the PWID or the community. Participants in all groups verbalized the connection between how a sanctioned, supervised environment with access to sterile injecting equipment would reduce risky injecting practices, fear of arrest, overdose, and connection to care. Participants in the study expressed strong reactions to SIF services, ranging from readiness to use the site tomorrow to recruiting friends to use the site to disappointment and anger that such facilities are not already available. Considering the narratives about the day to day complexities of injecting, losing friends to overdose, contracting HIV and HCV, and patterns of harassment and violence, it is understandable that participants would have a strong and anger-driven reaction to the absence of SIFs in NYC. At least one member of each group also expressed that they didn’t believe that NYC would adopt such a service and expressed that they felt looked down
upon in society and “not worth saving”. The concept of implementing a SIF would mean that the community cared about their health and safety, which is not a general belief among PWID. It is also not an unfounded belief. Experiences of PWID being stigmatized, blamed, and poorly treated is well documented.\textsuperscript{319-323} It is also perpetuated in research and service settings, with PWID often being labeled as ‘chaotic’, ‘non compliant’, or ‘hard to work with’.\textsuperscript{324-326} SIFs have demonstrated to connect PWID to drug treatment, medical services, and housing placement. The establishment of SIFs may contribute to existing healthcare reform efforts, including delivery system reform incentive payments (DSRIP) initiatives in New York, to connect high utilizers of the ED with a regular source of care. Managing the multi-daily risks of finding a place to inject is complex and competes with other priorities, including healthcare appointments. Several participants commented favorably on the scene where a SIF staff member assisted a PWID with tying a tourniquet, commenting on the benefit of having other support services available to them. Beyond the benefits of applying safe injection practices and potential cost and life savings by averting new cases of HIV and HCV, SIFs may be an effective strategy to engage and retain high risk individuals in healthcare.

4.4.1 Strengths and Limitations

There are several limitations to this study. First, the study did not fully describe any details about the operation of SIFs. Therefore, the perceptions of services are limited to what participants directly observed and interpreted from the one-minute video. The findings may not be generalizable to other settings, such as non-urban settings where there may not be access to syringe exchange programs with bathrooms for use or have a different context of where they inject. The focus groups did not specifically list out what a SIF may require as rules, such as
hand washing and not being able to share drugs, such as previous studies have and may over-
represent interest in the prospective use of a SIF. However, our study offers a new contribution
to the understanding of the complex nature of injecting drugs in NYC and is the first to
illuminate initial attitudes towards SIFs among PWIDs in the US.

4.4.2 Conclusion

SIFs are an evidenced-based intervention to minimize the health and social risks related to
injection drug use. Our findings indicate that PWID are willing to use such services and, in the
interim, are managing competing needs that may exacerbate health outcomes. Syringe exchange
program bathrooms appear to already be de-facto SIFs and are viewed as the safest place for a
PWID to inject, but are far from safe. In consideration of the overdose and hepatitis C epidemics,
the US should consider implementing SIFs as a natural and necessary extension of services for
PWID

4.5 References

4.6 Tables and Figures
Table 4A. Socio-demographic and risk behavior characteristics of PWID who participated in focus group sessions (N=33)

<table>
<thead>
<tr>
<th>Age (mean, range)</th>
<th>N</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>(44.82, 21-57)</td>
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</tr>
<tr>
<td>Under 30</td>
<td>3</td>
<td>9.1</td>
</tr>
<tr>
<td>30-39</td>
<td>5</td>
<td>15.2</td>
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<tr>
<td>40-49</td>
<td>12</td>
<td>36.4</td>
</tr>
<tr>
<td>50+</td>
<td>13</td>
<td>39.4</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18</td>
<td>54.5</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>45.5</td>
</tr>
<tr>
<td><strong>Race/ Ethnicity</strong></td>
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<td></td>
</tr>
<tr>
<td>white</td>
<td>6</td>
<td>18.2</td>
</tr>
<tr>
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<td>24.2</td>
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<td>Latino</td>
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<td><strong>Housing Status</strong> (past 3 months)</td>
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<td></td>
</tr>
<tr>
<td>Street-Homeless</td>
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<td>9.1</td>
</tr>
<tr>
<td>Unstable</td>
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<td>36.4</td>
</tr>
<tr>
<td>Stable</td>
<td>18</td>
<td>54.5</td>
</tr>
<tr>
<td><strong>Arrested or incarcerated (past year)</strong></td>
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<td></td>
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<tr>
<td>Arrest cited as public use</td>
<td>9</td>
<td>27.3</td>
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<tr>
<td><strong>Overdose Ever</strong></td>
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</tr>
<tr>
<td>Overdosed in past year</td>
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<td>28.1</td>
</tr>
<tr>
<td>Witness overdose</td>
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<td>71.9</td>
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<tr>
<td>Place of Injection Drug Use</td>
<td>Most Frequent</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Street or Park</td>
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<td>32.3</td>
</tr>
<tr>
<td>Stairwell</td>
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<td>0</td>
</tr>
<tr>
<td>Abandoned building</td>
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<td>0</td>
</tr>
<tr>
<td>Public bathroom</td>
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<td>0</td>
</tr>
<tr>
<td>Bus, subway, train</td>
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<td>0</td>
</tr>
<tr>
<td>Car or other vehicle</td>
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<td>0</td>
</tr>
<tr>
<td>SEP bathroom</td>
<td>5</td>
<td>16.1</td>
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<tr>
<td>Shooting gallery</td>
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<td>0</td>
</tr>
<tr>
<td>Home of friend/family/partner</td>
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<td>19.4</td>
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<tr>
<td>Own home</td>
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<td>32.3</td>
</tr>
<tr>
<td>Other</td>
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</table>

*Other includes airplane (1), Basement (1), Bus shelter (1), Empty lot (1), Beach (1), Elevator (1), Hallway (1), Hospital (2), Hotel (4), Methadone clinic (1), restaurant (1), rooftop (4), shelter (5), storage unit (1), telephone booth (3), train platform (1), train tracks (1), under a bridge (2)
Table 4C. Drug Use by Type and Frequency for PWIDS (n=33)

<table>
<thead>
<tr>
<th>Drugs Used in Past 30 days</th>
<th>N</th>
<th>(%)</th>
<th>Every day</th>
<th>A few times a week</th>
<th>Less than once a week</th>
<th>Less than once a month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methadone</td>
<td>24</td>
<td>72.7</td>
<td>92.0</td>
<td>0</td>
<td>8.0</td>
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<tr>
<td>Alcohol</td>
<td>16</td>
<td>48.5</td>
<td>37.5</td>
<td>37.5</td>
<td>6.3</td>
<td>18.8</td>
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<tr>
<td>Marijuana</td>
<td>10</td>
<td>30.3</td>
<td>20.0</td>
<td>20.0</td>
<td>20.0</td>
<td>40.0</td>
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<tr>
<td>Cocaine</td>
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<td>36.4</td>
<td>25.0</td>
<td>16.7</td>
<td>33.3</td>
<td>25.0</td>
</tr>
<tr>
<td>Crack</td>
<td>10</td>
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<td>30.0</td>
<td>30.0</td>
<td>20.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Heroin</td>
<td>28</td>
<td>87.5</td>
<td>39.3</td>
<td>21.4</td>
<td>25.0</td>
<td>14.3</td>
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<tr>
<td>Methamphetamine</td>
<td>3</td>
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<td>25.0</td>
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<tr>
<td>Opiates</td>
<td>6</td>
<td>18.8</td>
<td>50.0</td>
<td>16.7</td>
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<tr>
<td><em>Prescribed?</em></td>
<td>5</td>
<td>83.3</td>
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<tr>
<td>Downers</td>
<td>16</td>
<td>48.5</td>
<td>53.5</td>
<td>33.3</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Any Opioid</td>
<td>18</td>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Health Risks | “Well, I see there’s a lot of people who is not… they don’t care about what is it you’re using or what is it you’re doing, you’re just being watched so you don’t kill yourself, and that’s the most important thing about that video... they making sure that you clean yourself, you’re going thru a process and it’s up to you to do that... but you know you go there and do what you gotta do and you’re being watched and you’re being monitored so if anything happens they know what to do”

“...[it would be] somewhere she got the doctor her own things the supplies, the water, wash her hands...that’s a very safe environment and I wish they had something like that here in New York”

“First of all you got a lot of people that have no veins, they can’t find, so that would be good for person to actually find the vein for them”

“But there’s a lot of good that comes out of a place... the spread of HIV HCV all those types of diseases, is down. Overdoses and people dying is down.” |
|---|---|
| Social Risks | “You don’t have to worry about going to jail, you don’t have to worry about losing your life... it’s a safe haven”

“Participant 1: Crime would go down, know what I’m saying? If it was more controlled
Participant 2: I think so too” |
| Perceived benefits and use of a SIF if implemented in NYC | “I think people will go and try it out, I’ll be one of them. One thing that I like is that the person goes to clean up or whatever”

“They would knock people out the box! I’d let everyone know about that new program”

“If they was to have something like that here it would help us out getting off the streets and have a big list of kids watching us, its enough that people leave the syringes out there for the kids to see that when the crack epidemic, the little bottles in the schools and stuff like that here, so I think it would be much better if they had something like that here”

“Not only that but it would teach them safety and responsibility and I think that would help tremendously... it would make a big difference in the harm reduction community and in general the public health environment too because..."
a lot of people out there that use today that I see injecting when we on the sites they might have been injecting for 30 40 years and don’t have a clue”

“And a lot of people getting infected with the supplies out there they have a 50/50 chance of using somebody else’s stuff cause you don’t want to go look for something that’s cleaner… I think that would help a LOT”

“…if you think people will be embarrassed? I don’t think so. People would take advantage of it.”
Chapter 5: Discussion

5.1 Overview of the Dissertation
The use of illicit drugs is at an all-time high in the US. Since 2011, overdose has been the leading cause of accidental death among young adults, surpassing motor vehicle accidents. Every day there are at least 1,000 people who are treated for overdose in the emergency departments across the US. In addition to climbing overdose deaths, misuse of prescription opioids have led to increases in heroin use, injection drug use, and new epidemics of HIV and HCV. The need to identify new strategies and expand evidence-based approaches to reduce drug-related harms is critical to save lives and prevent another AIDS epidemic.

The national dialogue on how to address drug-related harm stretches from small towns in the middle of the US to large urban centers. In the past five years, the Office of National Drug Control Strategy (ONDCP) has hosted a series of sessions with community members, parents of children lost to overdose, doctors, people in recovery, and harm reduction programs to seek alternatives to the existing strategies to address drug-related harm. MMT and buprenorphine have been effective in reducing injection-related harm but remain unavailable or inaccessible to many PWID around the country. SEPs have been an evidence-based intervention effective in reducing new cases of HIV and HCV by providing sterile injecting equipment and also provide overdose prevention and naloxone distribution. However, there remain only 350 SEPs in 42 states in the US, mostly concentrated in urban centers. While SEPs slowly expand to new geographic areas, particularly in areas where there are declared states of emergency due to HIV outbreaks, the pace of expansion and corresponding funding are not enough to reach all PWID who need services. For the PWID who do have access to SEPs, they
may be able to receive sterile injecting equipment and naloxone but are left to prepare and inject drugs in environments that may be unhygienic, unsupervised, or rushed. SIFs are one evidence-based intervention that reduces intravenous transmission of HIV and HCV and reduces fatal overdose by providing a supervised, sanitary environment to inject drugs. Initial US-based research suggests that PWID would use a SIF and that SIFs would save both lives and money. In the first few months of 2017, the case for SIFs and their potential role in addressing both the overdose and HIV/HCV epidemics have been cited by researchers, medical providers, and public health officials alike. While there are is not a law against SIFs in the US, there has yet to be a SIF implemented.

The purpose of this dissertation is to describe public injection drug use in NYC, the association between public injection drug use and health risks, and the experience of PWID injecting in public places to contextualize both health and social risks. The findings of this research contribute to a public health rationale to implement SIFs. Prior to opening SIFs in Vancouver, a team of researchers at the University of British Columbia Centre for Excellence in HIV/AIDS reviewed existing data provided by the local health department and conducted a series of studies to document the impact of public injection drug use. The findings were one of the important contributing factors to educate and provide a rationale for implementation of a SIF. While there is a growing national conversation about the role of SIFs in addressing drug-related harms, the US-based research on their potential impact is less known. Using a mixed-methods approach, I analyzed data from the IDUCS and conducted five focus group sessions with PWID. I hypothesized that PWID are frequently injecting in public places, injecting in public is
associated with increased report risk behaviors, and PWID would perceive that SIFs could address some of these risk behaviors.

In Chapter 2, I tested the hypothesis that public injection drug use is associated with the receptive sharing of injecting equipment. Injecting equipment included syringes, cookers, and cotton filters. The relationship between receptive sharing of all three types of equipment and hepatitis C transmission is well documented. Therefore, the reported receptive sharing of injecting equipment serves as a proxy for risk of HCV transmission. A total of 787 PWID were included in the sample. I used frequencies and bivariate logistic regression to compare participants in two groups: participants who reported receptive sharing of injecting equipment in the past three months vs. no reported receptive sharing of injecting equipment. To test the hypothesis that public injection drug use is associated with the receptive sharing of injecting equipment, I constructed a multivariate regression model with variables that produced a p-value less than .20. Both significant and non-significant findings are presented in the final model. The main findings and interpretations are summarized in the following section of this chapter.

In Chapter 3, I test the hypothesis there are differences in risks between PWID who inject in public and PWID who inject only in private places. I used a multi-phase mixed-methods design to define public injection, the construction of the primary outcome variable, inform the selection of explanatory variables in the quantitative analyses, and describe key themes related risk and injecting in public places. A total of 33 PWID who receive syringe exchange services at SEPs in NYC participated in one of five focus group sessions. One of the focus group sessions was specific to PWID under 30. We identified four key themes related to what makes a place private
or public: physical features of a place, sense of control, trust in people who are in the space, and
exposure to being seen or arrested. We define a public place in the context of injection drug use
as “any place where a PWID has a low sense of control of who can access the space and how
long they have to prepare, administer, and clean up after an injection.” Then, I identified key
themes associated with public injection drug use: fear of arrest, overdose, level of drug
withdrawal, and fear of being seen or caught. I selected additional variables to include in the
model related to these key themes. Lastly, I selected two additional variables (ED admission and
having a PCP) that are related to current health policy discussions around reducing drug-related
harm. After selecting additional variables, a total of 755 PWID were included in the quantitative
analyses. The main findings and interpretations are summarized in the following section of this
chapter.

In Chapter 4, I tested the hypotheses that (a) PWID experience competing health and social risks
depending on the place they inject drugs, and (b) PWID would perceive SIF services as
beneficial to address experienced and observed risks associated with injection drug use. A total
of 33 PWID participated in focus group sessions conducted in two SEPs in uptown Manhattan. I
used a series of photographs of places where PWID inject to understand what considerations of
the physical environment or social environment that would impact their injection practices based
on risks discussed in the previous chapter. I also presented a one-minute video of a participant
accessing services from start to finish at a SIF in Vancouver, Canada to document initial
reactions to supervised consumption services. Using thematic analysis, I synthesized key themes
to describe how experiences of injecting involved a series of calculated risks and trade-offs.
In the following section, I describe the findings from each chapter and the interpretation based on my analyses.

5.2 Summary of the Findings

5.2.1 Chapter 2

There were four main findings in Chapter 2. The first finding is that over half (64%) of PWID in the study report they inject in public places. This is a novel finding for two reasons. First, this is the first study known to describe places of injection drug use in a variety of categories (10 categories) compared to other studies (maximum 4 categories). It also demonstrates how pervasive injection drug use is in spaces used by the public and may, as a result, better frame addressing injection drug use is a community priority. To date, no published research has indicated prevalence or frequency of injecting drugs in public places in NYC. However, these findings are higher than the National HIV Behavior Surveillance (NHBS) survey report of PWID injecting in public places in 2009\textsuperscript{176} (30%) but consistent with international research that has indicated that 40-70\% of PWID report recently injecting in a public place.\textsuperscript{157,229,265}

Second, PWID who inject in a public place are 63\% more likely to report the receptive sharing of injecting equipment compared with PWID who do not inject in public places. This is a significant finding for public health officials and SEPs who are attempting to minimize reuse of injecting equipment to prevent the transmission of HCV and HIV. Providing sterile injecting equipment is not enough to prevent receptive sharing of injecting equipment. In order to minimize receptive sharing, access to sterile injecting equipment must be accompanied by a supervised and sanctioned space to prepare and inject drugs. SIFs are one evidence-based
intervention to minimize the receptive sharing of injecting equipment. However, drug policies and policing practices must also be addressed to ensure that these facilities are accessible to PWID who may fear being targeted or arrested by accessing the services.

Third, PWID who obtain syringes from friends, family members, the street, or a shooting gallery have significantly higher odds of reporting receptive sharing of injecting equipment. Consistent with the research, access to sterile injecting equipment from pharmacies and SEPs is associated with a reduction in the reuse of injecting equipment. Receptive sharing of equipment is most likely to occur when PWID are injecting in groups. These findings add further support for addressing where injection practices take place to increase access to sterile injecting equipment and reduce the likelihood of receptive sharing of equipment. The implication of these findings may be that engagement in SEPs offer more than just injecting equipment that promote safer injection practices. SEPs must be scaled up in areas of existing and new areas where there are PWID. While the federal ban on funds for SEPs was lifted in 2016, the funds are limited and only certain states elect to receive them. Health officials in both states and local municipalities must include SEPs as a critical element of any HIV and HCV prevention strategy.

Lastly, injectors who smoke crack were more likely to report receptive sharing of injecting equipment. While the association between risk behavior and smoking crack among PWID is well documented, the association between using crack and receptive sharing of injecting equipment is a new contribution. It is also an important finding in terms of considering future interventions to reduce injection-related risk, such as supervised injection facilities (SIFs) versus Drug Consumption Rooms (DCRs). If a PWID also smokes crack and the use of crack is
associated with increased odds of receptive sharing, NYC should consider DCRs instead of SIFs to support PWID who use both drugs. Otherwise, a PWID who injects heroin or cocaine and also smokes crack may be less likely to attend if they are restricted to how they consume drugs.

Amidst the growing hepatitis C epidemic, these findings indicate that SIFs or DCRs would at minimum reduce receptive sharing among PWID who would utilize such services. In the subsequent chapter, I aimed to fully describe factors associated with public injection drug use.

5.2.2 Chapter 3

In addition to establishing a participant-informed definition of public injection drug use, there were five main findings in Chapter 3. First, public injectors have a higher risk profile: they are more likely to be homeless, report past year arrest, past year ED admission, past year overdose, and less likely to be connected to a PCP. There were several additional factors significantly associated with public injection drug use in the quantitative analyses. These include being under the age of 40 years of age, past year arrest or incarceration, past 30-day use of heroin or cocaine, past year overdose, and witnessing an overdose. There were no differences between the specialized focus group with PWID under the age of 30 versus the other four sessions with regard to place of injection from the survey data or narratives. Future research should conduct an analyses of the cohort of younger injectors to determine if there are unique risk factors, but is outside of the scope of this dissertation. The findings specific to overdose offer additional rationale to implement SIFs to address the overdose epidemic.
Second, homelessness and unstable housing is associated with public injection drug use, confirming our original hypothesis. While this finding is not surprising since we can surmise that participants who were unstably housed at any point in the past three months were less likely to have a non-public place to inject, it is a new contribution to the literature. It also further contributes to the rationale that housing is health, and that access to affordable housing continues to be a critical social determinant of health.

Third, PWID reported that fear of arrest as a primary factor taken into consideration when determining whether a place was ‘safe’ to inject. Fear of arrest weighed heavily into determining what place was safe to inject. Participants described tactics to inject quickly or avoid police. These findings are consistent with international studies and suggest that policing may impact the ability to apply safer injection techniques.

Fourth, participants may choose to inject in a public place to avoid fatal overdose. The only risk factor that was more of a concern when injecting in a non-public place was fear of accidental overdose and, without bystanders to respond, potential death.

Lastly, our study offers a new definition of public injection drug use derived from PWID and combines both physical and social components to describe what makes a place public.

In conclusion, PWID inject in public places because they have to, not because they want to. Access to stable housing, policing, efforts to prevent overdose, and stigma are all related to the experience of public injection drug use. PWID report a variety of risks associated with public
injection drug use. In the subsequent chapter, I take a deeper dive into understanding how PWID address concurrent potential risks and initial attitudes and beliefs towards the prospective implementation of SIFs in NYC.

5.2.3 Chapter 4

There were three main findings from the focus group sessions. First, finding a space to inject involves a series of calculated risks and tradeoffs. The participants of focus groups outlined detailed descriptions of both past experiences of injecting in public and considerations if they were to inject in one of the places presented in the photographs. The dominating trade off was to risk being arrested by injecting in a more public place versus risk a potentially fatal overdose due to injecting in a private place and not having bystanders nearby. The most valuable contribution of this finding is that the discussion of reusing injecting equipment or sanitary conditions was secondary to arrest and overdose, along with subjection to violence and theft or being seen by someone else. These findings illuminate the findings in Chapter 2 – PWID focus on avoiding arrest and fatal overdose first and foremost and, therefore, addressing those perceived priorities first is a necessary step to support safer preparation and injection practices.

Second, PWID are very aware of the potential impact of injecting in public on the community at large. This was a salient theme across all groups and was completely unprompted. Participants readily described the shame and negative self-talk when they were put in situations where they were injecting near parks or spaces where there are children. They described an intentional process to avoid injecting in public places near children and even prevent other PWID from doing so. Participants also described an intention to discard syringes properly to avoid others
being accidentally stuck with a used syringe, but recognized that policing was a barrier to doing so.

Third, PWID identified that injecting in the bathroom of a SEP was the safest place to inject. Participants described that they felt safest because they were less likely to be arrested since SEP staff are aware of the activity that occurs in the bathroom. They also described that they had observed or knew that SEP staff could reverse an overdose if it occurred onsite. Several participants also noted that the availability of both sterile injecting equipment and safe disposal kiosks in the bathroom meant that they were more likely to use sterile equipment and less likely to discard syringes in the community. SEP bathrooms appear to be fulfilling a partial role in addressing the risk of arrest and fatal overdose. However, they are still unsupervised and unsanctioned. To date, there is no literature published on injection drug use in bathrooms of SEPs. Our study highlights that pseudo-SIFs are in operation and already serve as spaces for PWID to inject. SIFs are a natural and necessary extension of harm reduction services at SEPs in recognition of the prevalence of unstable housing and drug-related arrests.

Lastly, participants had overwhelmingly positive reactions to the concept of a SIF and believed it would address the risk behavior described earlier in the focus group sessions. Participants were also quick to note that they did not believe that such a service would be available to them, rooted in a belief that NYC was more interested in policing and jail than health for PWID. Participants were very enthusiastic when it was presented that individuals in the city health departments were discussing SIFs as a potential intervention. Several asked specifically how to become involved in advocating for the service.
The most significant overall finding in this chapter is the connection between the calculated risks and prospective use of a SIF. The narratives in this chapter demonstrate elaborate planning, adjustments to plans, weighing of severe long-term and short-term risks, and considerations for themselves and for the community. This is an important counter-perspective to the more pervasive description of PWID in research, describing PWID as ‘erratic’, ‘unstable’, ‘chaotic’, and ‘non-adherent’. These narratives suggest that not only are PWID concerned with themselves and the community, they also make decisions on a daily basis that involve planning and multi-step processes. This indicates that PWID may indeed access prospective SIF or DCR services in NYC if they were available and may even support other PWID in doing so.

5.3 Policy Recommendations

To date, this is the first study in the US to fully describe public injection drug use. It is also the first study to report on attitudes towards SIFs and the potential acceptability in NYC. Based on the findings from this research and a review of existing legislation, health policies, and evidence-based interventions, I have identified a relatively broad scope of recommendations that would begin to address both the underlying causes and consequences of public injection drug use described in this research. This is not an exhaustive list of recommendations; addressing drug use is complex and requires interdisciplinary action and reform. The following recommendations are specific to themes and findings in this dissertation research.
5.3.1 Recommendation #1

**Implement SIFs in the US as one part of a comprehensive approach to reduce public drug use.**

Based on my research findings, public injection drug use is associated with a variety of health and social risks. Implementing SIFs would likely reduce public injection drug use, and in turn (a) reduce the risk of transmission of HIV/HCV via offering sterile injecting equipment in separate single-person booths, (b) prevent fatal overdose, (c) reduce drug-related arrests due to public drug use, and (d) decrease healthcare costs associated with injection-related infections. The benefits of SIFs and have been described at length in the previous chapters.

SIFs are not a silver bullet. However, in addition to preventing HIV/HCV/SSTIs and fatal overdose, they may support existing health care reform efforts. In New York, DSRIP initiatives aim to connect high risk individuals with a usual source of care to reduce preventable ED admissions. The barriers to primary care, including stigma and negative experiences with healthcare providers, are well documented. In Chapter 1, we described the costs of HIV and HCV treatment, SSTI admissions and potential complications, and opioid overdose. In Chapter 4, we identified that public injectors were more likely to report past year ED admission and less likely to have a PCP. In Chapter 5, participants described their willingness and interest in accessing services at a SIF, highlighting a portion of the video where a healthcare provider assists a participant with tying a tourniquet. In recognition of the barriers to care and the need to identify and connect high-risk individuals to a regular source of care, the establishment of SIFs may serve as a strategic and cost-effective way to connect and engage high utilizers of the ED.
Next, I describe several components of this recommendation including legal and health policy approaches to implementation.

5.3.1.1 Select a pathway to implement SIFs

There are various approaches to implementing SIFs that involve a combination of legislative change, research exceptions, and local authorization. All of the following pathways require community education of key stakeholders who may impact the establishment or authorization of a SIF. These individuals may vary by locale but are likely to include the following: public health officials and health departments, law enforcement and local precincts, community boards, elected officials, healthcare providers and administrators, drug treatment providers and administrators, business improvement districts, community-based organizations, and faith-based organizations. The funding of a prospective SIF varies by approach and locale.

a) Open a SIF as a stand-alone service or as part of an existing organization. As of 2017, all status and municipalities have the authority to establish SIFs as part of the “government’s duty to protect and preserve the welfare of their citizens” as part of the legal authority to fulfill police power. However, the risks of this approach may be that two existing federal statutes in the federal Controlled Substances Act that may be applied to the organization operating these services or individuals working within that organization. The first is Section 844 which prohibits drug possession. Therefore, any person who enters a SIF that has pre-obtained drugs may be at risk of arrest. The second is in Section 856, which is known as the Crack House Status Law (21 USC § 856) which makes it a felony to knowingly rent, lease, open, or use a place for the purposes of
producing, distributing, or using a controlled substance. The statute is amended by the Illicit Drug Anti-Proliferation Act of 2003 (S. 226)\textsuperscript{356} and any owner or worker in the site may be prosecuted. Therefore, by opening a SIF under the current conditions, a site and the clients who access it may run the risk of being prosecuted by the federal government.

b) **Obtain a federal research exemption**, which is the approach that Vancouver used in 2003. An exemption may be provided by the Center for Drug Evaluation and Research (CDER) under the Federal Drug Administration (FDA). However, the process of receiving a federal exemption may take years and, if granted, may put a hold on the ability to expand SIFs beyond the original sites listed in the exemption. In Canada, a research exemption was granted in 2003 and was challenged by the federal government several times when a new conservative administration was in place. While the one site was able to operate, the unintended consequence of the research exemption was that other sites that were needed were unable to open since they were not listed in the original exemption. Since the federal administration changed in 2016, several sites in Toronto and Ottawa are set to open based on local provincial and municipal government authorizations.

c) **Authorize a SIF via state or municipal legislation.** Both state and city governments may declare a public health emergency and authorize legislation to sanction SIF services. Municipal governments have the power to enact local laws according to the state constitution Municipal Home Rule Law (N.Y. Const. art. IX, §§ 2(b)(1), 2(c), 3(d)(1); N.Y. Mun. Home Rule Law § 10). To date, there are several states which have introduced single legislation or recommendations as part of a broader drug reform strategy: New York, California, Maryland, Massachusetts, Vermont, and Washington. To date, two
municipalities (Seattle, WA and Ithaca, NY) have introduced municipal drug strategies developed by designated drug taskforce committees that include SIFs. In New York state, the drafted legislation suggests that the New York Department of Health or local health department may approve an application within 45 days of receipt to approve SIFs that meet a list of 10 requirements of programmatic operation. The legislation also indicates that SIFs will automatically be designated as syringe exchange programs (NY Comp. Codes R. & Regs. tit. 10, § 80.135) and opioid overdose prevention programs (N.Y. Comp. Codes R. & Regs. tit. 10, § 80.138). The legislation also specifies that individuals who rent/lease/own, operate, provide services, or received services at the SIF will not be prosecuted by state and local authorities. However, due to the two federal statues described in the first recommendation, it is possible that any of the entities may be prosecuted should the federal government intervene.

5.3.1.2 Consider the implementation of DCRs instead of SIFs to account for PWID who smoke crack. Our findings indicate that PWID who use crack were more likely to report the receptive sharing of injecting equipment. If a PWID smokes crack in the same episode as injecting but are only allowed to use injectable drugs at a SIF, they may be less likely to access services. Black and Latino PWID report higher use of crack and are also more likely to be targeted by police. In order to not further perpetuate discrimination within public health services, including an inhalation room for PWID to smoke crack is essential. DCRs have been well evaluated and show similar outcomes to SIFs.
5.3.1.3 Scale up SEP bathroom services in the absence of a SIFs/DCR. Our findings suggest that PWID viewed existing SEP bathrooms as the safest place for injection drug use due to reduced fears of overdose and arrest. SEPs are also equipped with sterile injecting equipment onsite and hazardous waste disposal. SEPs are serving as pseudo-SIFs in the absence of other options. In September 2016, the NYCDOHM and NYSDOH included in the new fiscal year contracts for SEPs that they require a minimal set of standards for bathrooms that are used by participants; monitoring system to prevent overdose, onsite naloxone, procedures for onsite overdose, stainless steel tables, high grade bleach and cleaning equipment, and hazardous waste containers. The next step would be to implement these minimum bathroom requirements for all service providers that serve PWID.

While SIFs are one approach to minimize public injection drug use, associated adverse health outcomes, and connect PWID to other support services, they are only one piece of a broader continuum of care that is needed to improve population health. Therefore, the following recommendations address a broader framework of both the underlying causes and consequences of public injection drug use.

5.3.2 Recommendation #2

Scale up syringe access in areas of high rates of overdose, HIV incidence, and HCV incidence.

SEPs have demonstrated to effectively minimize the transmission of blood-borne infections. They are also sites where PWID may access naloxone to prevent overdose. Our findings describe that one quarter of PWID report receptive sharing of injecting equipment and experience barriers
to applying safer injection practices. If the participants in this study who are enrolled at a SEP continue to experience barriers, it is likely that individuals who have to travel long distances or do not have any access to SEP may have higher rates of risky injecting practices. Next, I describe several key legal and policy elements that are critical to ensure successful establishment and access for PWID of new SEPs.

5.3.2.1 Decriminalize possession of syringes and drug paraphernalia. In New York, the Penal Law (§ 220.4) states that a person who possesses or sells a hypodermic syringe may be charged with a class A misdemeanor. The exception is if the syringe was distributed by one of the 24 licensed SEPs and the individual can provide proof and verify that they are enrolled in a program (Public Health Law § 3300.81). For individuals who receive syringes from pharmacy-based expanded syringe access programs (ESAP), from friends, or are unable to verify proof of enrollment, the risk of carrying a syringe may be high for PWID. Decriminalization is essential to remove the barriers to access to sterile syringes and injecting equipment to prevent receptive sharing of syringes, injecting equipment, and/or improper disposal of equipment due to fear of arrest.

5.3.2.2 Prioritize the establishment of SEPs in states and municipalities where there is a high prevalence of injection drug use using proxies of overdose data, HIV incidence, and HCV incidence. State and local health departments must allocate both funding and infrastructure to prioritize the implementation of SEPs. SEPs have been in legal operation in the US since 1992 and, in New York, was established by a local Health Commissioner. Each state has their own version of local public health law and penal codes to support the establishment and operations of
SEPs. In addition to the introduction of legislation or local authorization, efforts to establish new SEPs must include community education and advocacy efforts with key stakeholders: community boards, PWID, neighborhood associations, local precincts, elected officials, health care providers, and faith-based organizations. Community education and support is critical to ensuring the success of SEP programs and access for PWID.

5.3.2.3 *Expand existing SEPs to new sub-populations* where there is a high prevalence of injection drug use using proxies of overdose data, HIV incidence, and HCV incidence. In NYC, many of the SEPs reach an older population using street-based outreach methodologies to deliver resources and education in areas where PWID congregate to use drugs. For younger injectors, many of which reside in suburban communities, these outreach strategies may be less effective. Initiatives that involve social media or online message boards may be a more effective way to engage and connect young PWID to services. Studies of younger injectors (under 30 or 35 years of age) suggest that they are less informed about safer injection techniques, HIV and HCV prevention, and access to naloxone to prevent overdose. Providers must think “out of the box” to reach new injectors using platforms of communication that match the population. Connection to young PWID early or before injection initiation is important in developing safe practices and preventing disease transmission.

5.3.2.4 *Expand pharmacy syringe access programs*. Particularly in suburban and rural areas, there may not be support or sufficient population of PWID to justify funding a stand-alone SEP. In recognition of a new and emerging sub-population of younger white PWID recent HIV and HCV outbreaks, strategies that provide both geographic access and some sense of
confidentiality (i.e. walking into a pharmacy versus a clinic or homeless services agency) is a practical strategy to make sterile injecting equipment available. Pharmacy access programs are a cost-effective supplement to improve syringe access in areas with SEPs and are essential in the absence of SEPs. These initiatives should also be accompanied by pharmacy education and access to naloxone.

5.3.2.5 Adopt syringe distribution, not syringe exchange. While there are not restrictions to the number of syringes an individual can obtain from a syringe exchange in New York, several states have adopted capitation of the number of syringes or require that individuals return syringes in order to obtain new syringes. While the theory of syringe exchange (return used syringes to obtain sterile syringes) can minimize improperly discarded syringes in communities, it is not a practical or safe practice for many individuals. Particularly for individuals who are unstably housed or homeless, storing used syringes carries significant risk of being charged with possession due to drug residue. It may also not be possible for an individual to return syringes to the syringe exchange program every day due to distance or schedule conflicts. In cases where syringes must be returned to obtain new syringes, individuals may go into areas where there are discarded syringes and pick up used syringes from other people which may introduce accidental needle stick and, in turn, potential infection. In the absence of access to affordable housing and punitive drug policies, distribution models will more effectively promote using a sterile syringe for every injection and minimize receptive sharing.

5.3.3 Recommendation #3

Expand access to overdose prevention programs.
While a SIF (Recommendation #2) will prevent fatal overdose from occurring on the premises, it is one piece of a much larger and complex strategy to reduce fatal overdose. Strategies such as decriminalization and regulation of drugs (Recommendation #1), improving access to naloxone through SEPs (Recommendation #3), improving access to drug treatment (Recommendation #5), and improved training of providers in the area of harm reduction and substance use (Recommendation #7) are other components of an effective strategy to reduce fatal overdose. Other critical components include:

5.3.3.1 Adopt Good Samaritan Laws to support PWID who are witnessing an overdose to call 911 without fear of arrest due to possession of drugs. PWID overdose in a variety of settings and the 911 Good Samaritan Law relieves bystanders from potential prosecution for possession of drugs.

5.3.3.2 Mandate overdose prevention education and naloxone distribution in emergency departments (ED) following an overdose episode. Initial pilots of ED-based naloxone distribution programs have indicated success in training and distributing naloxone to high-risk individuals.

5.3.3.3 Adopt physician standing order policies and pharmacy-delivered protocols to promote distribution of naloxone to laypersons in all states. Standing orders to provide increased access to lay health workers and programs without a physician to distribute naloxone to PWID and their friends, family members, and other individuals who may be in proximity to a future overdose. There are currently 44 states that permit naloxone to be distributed via standing order and 5
states that permit pharmacist authorization. Expanding these protocols to every state is a cost-effective way to improve access to naloxone and reduce overdose deaths. However, such policies must be accompanied by legislation to protect providers from civil liability or criminal action.

5.3.3.4 Increase co-prescribing of naloxone and opioid analgesics. Medical providers are in a unique position of building a relationship with patient who is using opioids. Initiatives to co-prescribe naloxone and offer overdose education to individuals receiving prescription opioids is another complimentary component of overdose prevention and does not increase liability for the provider.

5.3.4 Recommendation #4

Improve access and coverage of evidence-based drug treatment. MAT is an effective intervention to minimize or eliminate injection drug use altogether. One of the driving factors of public injection as described by participants in the focus group sessions was experiencing withdrawal symptoms. Several participants discussed barriers to MAT; availability, travel and insurance logistics, and provider education contribute to limited access. In New York, providers have reported experiencing barriers to prescribing buprenorphine due to training requirements and the number of patients they are able to prescribe to at a given time. There have been several changes in the past year that have increased access to buprenorphine treatment. In July 2016, Section 303 of the Comprehensive Addiction and Recovery Act (CARA) was modified to allow nurse practitioners (NPs) and physician assistants (PAs) to prescribe buprenorphine after 24 hours of required training. While patient loads still
exist for the first year of prescribing (30 patients), patients who are already receiving prescriptions can be removed from the existing patient load in order to offer buprenorphine to new individuals seeking treatment. Furthermore, the department of Health and Human Services (HHS) Secretary may designate $25 million per fiscal year until 2021 to provide grants to state substance use agencies, health departments, and non-profit organizations to expand buprenorphine. With these additional funds, I recommend the following programmatic and health policy recommendations:

5.3.4.1 Implement buprenorphine treatment at SEPs. To reach PWID, offering buprenorphine at SEPs may be one effective strategy to reach high risk current injectors. Previous research has indicated that SEPs may be an effective venue to improve access and adherence to buprenorphine.\textsuperscript{367,368} As per Recommendation #2, the implementation of SIFs would likely increase the number of PWID connected to drug treatment options. Participants of the SIF in Vancouver are twice as likely to enroll in drug treatment programs compared with PWID who do not receive SIF services.\textsuperscript{263} To reach suburban and rural PWID, outreach strategies and involving telemedicine and e-prescribing may be one effective way to cover a wide geographic area if substance use agencies are limited.

5.3.4.2 Prevent the repeal of the Affordable Care Act (ACA). Insurance coverage of MMT and buprenorphine is critical and may be compromised for individuals in Medicaid expansion states or for individuals receiving insurance through state health exchange programs if the ACA is repealed. Access to effective drug treatment is a critical component of reducing injection drug use and, in turn, the consequences of public injection drug use.
5.3.4.3 Improve medical provider training in working with PWID. Provider training is essential to support a therapeutic relationship – one study found that 14% physicians felt that prescribing buprenorphine was just replacing one addiction for another and 12% felt that PWID were committing crimes and deserved punishment.\textsuperscript{338,369} Ensuring that medical training incorporates evidence-based approaches to working with PWID, including trauma-informed care and motivational interviewing, are essential to retain PWID in care. See Recommendation #7 for expanded recommendations.

5.3.5 Recommendation #5

Improve access to HCV testing and treatment taking lessons learned from the HIV/AIDS movement.

The consequences of receptive sharing of injecting equipment is the risk of contracting HIV or HCV. One quarter (25%) of participants in the study reported that they had reused injecting equipment someone else had already used. Public injectors had higher than twice the odds (OR = 2.5) of receptive sharing of injecting equipment compared with non-public injectors. One of the predictors of receptive sharing of injecting equipment is reporting that a PWID had the same HIV or HCV status as the person they were using with. However, we know that many PWID may be unaware of their current status.

New York State committed to ending the AIDS epidemic by the end of 2020. The rate of new HIV diagnoses continues to decrease every year (4,600 in 2009 vs 3,400 in 2014) as a result of successful rapid testing and access to treatment initiatives. The three-point plan aims to (a)
identify undiagnosed individuals living with HIV and link them to health care, (b) link and retain HIV positive individuals in healthcare, and (c) facilitate access to Pre-Exposure Prophylaxis (PrEP) for non-HIV positive high risk individuals to keep them HIV negative. The policy recommendations in the End AIDS 2020 Blue Print are well-reviewed and comprehensive. They also include recommendations to implement SIFs and expand SEPs. While HCV is more prevalent and more infectious than HIV, the same advocacy and initiatives have not been the same for HCV. Approximately 200,000 New Yorkers are living with HCV with prevalence estimates of 40% among PWID. Therefore, I focus my recommendations to be aimed at initiatives to test and treat PWID for HCV.

5.3.5.1 Amend public health law to allow HCV screening for minors. Currently, minors must receive parental consent for screening (see N.Y. PHL S 2504(1), PHL 27980, 2781, 2305). Similar to past efforts to remove age restrictions for HIV testing, the same should be modified for HCV to improve access to screening and early detection.

5.3.5.2 Reform payer formulary restrictions for HCV treatment medications to be based on recommendations guided by the American Association for the Study of Liver Diseases (AASLD). Select insurance plans use restrictions based on severity of disease, co-morbidity, substance use, and mental health diagnoses as grounds for denying coverage of treatment. To improve access to treatment, insurance must cover treatment costs for the PWID and be based on clinical guidelines.
5.3.5.3 Expand patient navigation programs. In the IDUCS parent study, over half (56%) of PWID reported that they were HCV positive at their last test felt uninformed about treatment options. In Patient navigation programs, including NYC’s Check Hep C program, offer care coordination and in-person escorts to promote engagement in HCV treatment. Particularly for PWID who experienced interferon-based treatment and accompanying side effects, some PWID may feel reluctant to enter treatment. Patient navigation and educational initiatives to increase access to treatment is one approach to reduce the number of PWID infected with HCV and, in turn, risk due to receptive reuse of injecting equipment.

5.3.5.4 Mandate HCV antibody to RNA reflex testing at all health centers and hospitals and support funding for reflex testing at CBOs. While expansion of rapid HCV testing has been a priority in the New York Health Department in the past five years accompanied by training and funding for CBOs, the availability and access to RNA reflex testing (requiring phlebotomist for a full blood draw and a laboratory) is limited.

5.3.5.5 Expand and prioritize testing and treatment of HCV in prisons. The prevalence of HCV in the US is 1% while the prevalence in US prisons can range from 12% to 40%. Studies have shown that inmates continue to inject drugs in prison and share equipment for tattoos. Expansion of testing and treatment initiatives in the criminal justice system is a cost-effective, strategic approach to reducing the number of people infected and re-infected.
5.3.6 Recommendation #6

Integrate and expand harm reduction services and approaches into traditional medicine.

As described in Chapter 1, many PWID report experiences of stigma and poor treatment in the medical system. In a recent study of general internists, 46% reported they provided care for patients with substance use disorders (SUD) but only 20% felt very prepared to screen for SUD, 9% to provide a brief intervention, and 9% to discuss medication treatment. Nearly one third (31%) reported that they believed that SUD is different than other chronic diseases because it is a choice. While treating substance use as a health issue versus a criminal justice issue is a step in the right direction, providers in the health system must be supported and trained in effective strategies to work with PWID.

5.3.6.1 Expand comprehensive substance use training to all medical training programs. In 2016, the Association of American Medical Colleges (AAMC) developed new curricula specifically to focus on opioid-related education and training with 74 schools enrolled in the program. Initiatives that focus on incorporating harm reduction approaches to managing drug use instead of just eliminating drug use creates space for PWID and providers to communicate about both health and drug-related issues. Even for providers who are less likely to work with PWID, teaching tools such as SBIRT (Screening, Brief Intervention, and Referral to Treatment) to effectively screen and direct PWID to services may serve as an important tool to support providers in their self-efficacy and preparedness.

5.3.6.2 Develop partnerships with community-based organizations, including SEPs. New York dedicated $8 billion for Medicaid redesign initiatives, including Delivery System Reform
Incentive Payments (DSRIP)\textsuperscript{261}, with the common goal of reducing preventable ED admissions. Funds were designated to hospital systems to develop initiatives to connect with high utilizers of the ED. Partnerships between hospitals and community-based organizations can improve patient engagement and retention in care, particularly if initiatives include patient navigation and alternative approaches to engagement.\textsuperscript{287,376} Our findings demonstrate that public injectors are more likely to report they had been admitted to the ED in the past year. In Recommendation #2, I highlighted that SIFs may serve as central hubs to identify, engage, and connect high utilizers to primary care. However, in the absence of SIFs, SEPs may also be able to serve in this function. Health care systems would benefit from partnering with SEPs that are connected to high utilizers of the ED and ultimately reduce costs and improve care.

\textit{5.3.6.3 Advocate for Centers for Medicaid/Medicare Services (CMS) to approve billable harm reduction services.} In 2014, a Service Provision Amendment (SPA) that included a list of 14 harm reduction services was introduced to CMS for approved reimbursable services. One of the limitations of SEP expansion and reluctance to provide harm reduction services in medical settings is that the services (i.e. syringe exchange, supportive counseling, crisis intervention, managed drug use counseling) are not billable. This creates an over-dependence of SEPs on grant-based funding which limits the budget and potential to expand. It also does not provide any incentive for medical providers to offer harm reduction services beyond their own interest. Billable services would create both value and feasibility of providing these services.
5.4.6.4 Integrate overdose risk screening tools. Recent developments in measures to identify overdose risk, such as the Opioid Risk Behavior Scale (ORBS)\textsuperscript{377}, should be adopted into routine primary care.

5.3.7 Recommendation #7

**Expand access to affordable housing for people who use drugs.**

Unstable housing was significantly associated with public injection drug use. Housing is critical determinant of health and, in the context of injection drug use, is key in preventing public injection, storage of sterile injecting equipment, and proper disposal of injecting equipment. Injecting in unsanitary conditions, such as under bridges or in public restrooms, can further increase the risk of injection-related infections. While there are a variety of recommendations to be made to improve access to affordable housing in NYC, the two recommendations below are most relevant to public injectors.

5.3.7.1 Adopt Law Enforcement Assisted Diversion (LEAD) in New York. As discussed in the Chapter 5 focus group findings, may individuals who are homeless or unstably housed come in contact with law enforcement. In the absence of decriminalization (Recommendation #1), incorporating diversion strategies to connect PWID with housing and health services is a more effective way to improve health.\textsuperscript{118} Particularly for HIV and HCV (see Recommendation #6), preventing incarceration is also HIV and HCV prevention. Arrest and incarceration may also disrupt a PWIDs ability to retain housing applications and processes.
5.3.7.2 Implement a Housing First Model (HFM),\textsuperscript{124,125} which is a proven method of ending all types of homelessness by providing ‘rapid re-housing’ to any individual who is homeless. To obtain housing, individuals are not required to achieve sobriety or complete clinical assessments. The result is that individuals are less likely to return to homelessness and municipalities see significant reductions in the use of emergency rooms and crisis service institutions.\textsuperscript{126,228}

5.3.8 Recommendation #8

\textbf{Decriminalize all drug use}, starting with minimizing individual drug possession laws

While the focus of this dissertation is related to public injection drug use and SIFs as a potential strategy to improve the health of PWID, it would be remiss to not acknowledge that many of the driving factors of risk behavior and social consequences of drug use are due to the punitive US drug policies. Fear of arrest and past year arrest were related to both the quantitative and qualitative findings in this dissertation and describe an important social contextual factor that impedes risk reduction practices. The 40-year war on drugs has cost hundreds of billions of dollars\textsuperscript{108} and has not had any impact on the prevalence of drug use. The war on drugs has resulted in mass incarceration, with the US holding 25 percent of the world’s incarcerated population but comprising only 5% of the world population.\textsuperscript{83} In 2014, there were 1.5 million drug-related arrests; 80% of the arrests were for possession charges only.\textsuperscript{109} Community policing policies such as Stop and Frisk contribute to the well-documented disparity of drug-related arrests among Black and Latinx individuals\textsuperscript{230,340–342}, contributing to and perpetuating a cycle of poverty and inequity.\textsuperscript{112,343,344} Black people comprise 13% of the US population\textsuperscript{345} but represent 40% of those incarcerated in state or federal prisons for drug-related violations\textsuperscript{346}, even though rates of drug use are similar to white people.\textsuperscript{245} The lack of regulation also means that drugs are consumed with varying levels of potency and contents (e.g. fentanyl in heroin\textsuperscript{347–350}, levamisole
in cocaine\textsuperscript{351–353}), further exacerbating overdose and drug-related infections. In Chapter 4, we heard many accounts from participants that fear of arrest was a driving factor in where they injected and in their ability to apply safer injection practices. The recommendations and potential policy approaches to decriminalization of drugs is a dissertation in unto itself. For the purposes of this research, it is important to recognize the impact of existing drug policies on the ability to implement the following policy recommendations.

5.4 Strengths and Public Health Significance

The primary strength of this culmination of research is how timely it is in the national discussion of addressing drug-related harm. The rates of illicit drug use increased by 15% between 2014 and 2015 in the US.\textsuperscript{1,378} NYC experienced its fifth consecutive year of significant increases in fatal overdose.\textsuperscript{347} Various suburban and rural areas reported new cases of HIV and hepatitis C due to new cohorts of injectors.\textsuperscript{65,190} The entire country is discussing how to address the overdose crisis and potential of a new wave of the HIV epidemic. The time for public health interventions that are new and evidenced-based is now.

Timeline of Research Development, Policy Changes, and Advocacy

At the time this study was conceptualized and proposed, there had been no mention of SIFs in the US in major media since a brief report in 2007. At that time, SIFs were suggested as part of a comprehensive approach to HIV prevention in San Francisco.\textsuperscript{379,380} After several indications from the local health department that there was internal support for moving forward, a federal-level agency was alerted to the plans and threatened to cut federal funds for the department if they proceeded with supporting SIFs. Since that time, there have been several efforts to organize
around support for SIFs among harm reduction providers and overdose prevention advocates. While these advocates have spoken in internal circles about organizing strategies and stop-gaps, including allowing participants to inject on SEP premises in bathrooms, there has not been any public endorsement or initiatives since the incident in San Francisco. Given that there has traditionally been opposition to SEPs and unstable funding available, any pushing of the envelope was perceived as a potential threat to existing operations.

In June 2014, in my role as the Executive Director of a SEP in uptown Manhattan, I spoke out in a major media outlet that I was permitting PWID to inject in the bathroom on the premises. I also included that we had added elements to the bathroom to make is safer for injection drug use, including a monitoring system and easily-accessible naloxone to reverse overdoses. The statement was immediately met with great concern from other leaders in the field and the board of the organization. Quickly thereafter, I formed a public injection working group to discuss how to address the lack of space for PWID to inject. The group consisted of researchers, directors of SEPs, government officials, policy makers, and peer educators of SEPs. The group met on a monthly basis and semi-monthly in sub-committees to write a collective position statement in support of onsite injection drug use at SEPs, a legal brief on potential ramifications of onsite injection and preliminary review of a SIF legal strategy, research overviews of SIFs, potential program models of SIFs, and a proposal to conduct a SIF feasibility study.

During the same time, I produced and co-directed a short documentary titled Everywhere But Safe: Public Injecting in New York as an educational tool to discuss public injection drug use and introduce the ideas of SIFs. I collected over 80 hours of footage for what became a 34-minute
documentary film. The film features participants of SEPs in both NYC and upstate New York, peer educators, staff of SEPs, and government officials all speaking to why public injection drug use is a relevant and timely topic of discussion and action.

In August 2015, we premiered *Everywhere But Safe* and hosted a town hall discussion on public injection. This included the directors of the NYSDOH AIDS Institute and NYCDOHMH Bureau of Alcohol & Drug Use Prevention & Treatment (BADUPCT), participants of SEPs, former staff of SIFs in other countries, and direct service workers. Two weeks later, we hosted a larger town hall event as the launch of the SIF-NYC campaign to promote SIFs in NYC. Over 650 people attended to learn about why public injection drug use is an important health topic to address overdose and hepatitis C transmission and to hear from leaders in other countries who had worked at SIFs. The NSYDOH AIDS Institute and NYCDOHMH hosted a private stakeholders meeting on public injection drug use in NYC and produced a preliminary report.

Since that time, I have organized over 15 town hall-style events in 9 cities across the US using the film as a launching pad for discussion. The film has been viewed over 25,000 times and clips are used in legislative briefings and community education settings across the country. Several of these cities, including Seattle and Ithaca, have since then developed municipal strategies to address public injection by implementing SIFs. SIF-NYC has also grown to represent over 35 organizations in NYC. In September 2016, the NYC City Council approved a $100,000 feasibility study supported by the NYCDOHMH. Articles about SIFs as a viable and valuable approach to reduce the overdose and HIV/HCV epidemics have been produced in the New York Times, Forbes, Wall Street Journal, USA Today, Time Magazine, and the Associated Press.
Ireland, Slovenia, Scotland, and the United Kingdom have all announced plans to implement SIF and DCR services in the next year. Canada has opened two new SIFs in the past year with plans to expand to include 5 more sites by the end of 2017. While my involvement in producing a documentary film and campaign were not part of this dissertation research, I would be remiss to not mention the profound impact it has had on public health policy in the past two years. While they have not been defended or published, the findings from this research have already informed policy through my own dialogue and uplifting of voices from the focus groups shared in spaces with policy makers. Particularly with regard to ensuring that the impact of policing and fear of arrest have on the ability to apply safer injection practices, which was missing from the vast majority of public health literature.

5.4 Study Strengths
In addition to the timeliness and informal impact on policy, there are several strengths of this study that are worth highlighting.

First, the mixed-methods approach to understanding public injection, risk, and attitudes towards SIFs was critical. The preliminary Chapter 2 findings indicating that public injection is associated with increased risk of receptive sharing of injecting equipment would not have meant much without the qualitative data describing rushing injections and sharing preparation equipment to avoid arrest. Understanding the social environment and the weighing of risks, including potential overdose and arrest, on a daily basis add both an explanation for the receptive sharing of injecting equipment and a relatable understanding of rushing. In Chapter 4, we learned more about the complex thought processes and other considerations related to injecting in public, including avoiding injecting in front of children and disposing syringes in a safe manner. Just as
the qualitative data informed the quantitative data, the reverse is also true. We were able to quantify the phenomena and patterns discussed in focus group sessions with survey data, such as the relationship between past year arrest and public injection. We also used the quantitative data to initially inform how to set up the facilitators guide and select photographs for discussion based on frequencies of place of injection drug use. We also used the survey data to compare demographic patterns in the focus group sessions (e.g. median age) to inform recruitment strategies. This ultimately resulted in adding a specialized focus group session for younger PWID. Lastly, the mixed methods approach allowed for the creation of a PWID-defined explanation of what public injection means. Given that public injection is the primary variable of interest in each of the chapters and the samples for the survey data and focus groups are similar, the integrity of of the definition is stronger and more meaningful versus a definition from a study at an international site. This definition may carry through other studies in the US related to public injection drug use since it is the first and only PWID-defined version.

Second, the study is the largest and first exclusively public injection-related study in the US. Internationally, a plethora of research on the efficacy of SIFs and DCRs has been published. However, even the studies related to public injection drug use are limited. The majority of studies are quantitative in design and are primarily set up as feasibility studies prior to opening SIFs and DCRs. The few studies that are qualitative in nature are limited to specific areas of stigma, community perception, and policing. These studies do not explore the complex nature of calculated risks and tradeoffs of public injection drug use. Further, they are conducted in places with different drug policies, access to health services, and general policing patterns related to
drug use. Our study offers findings that both represent a sample of PWID in the largest city in the US and situations and experiences specific to US drug policies.

Lastly, the study was designed and conducted by individuals who have extensive experience working with PWID or history of drug use in NYC. The survey was designed by experts in the field of harm reduction and public health research. The survey was tested and modified according to feedback from PWID who are current or past participants of SEPs. This improved the clarity and cultural competence of the survey itself. There was very little missing data due to interviewer-administered survey design and thorough training of the field interviews (16-20 hours total). Further, surveys were conducted at sites where PWID already have a strong rapport with service staff and may have supported the recruitment of participants to the study. The focus group sessions were conducted by myself and a colleague who has worked in harm reduction and previously at a SIF in Australia. The focus group session participants were open to discussion and appeared to have little to no reticence to discuss their experiences or disagree with fellow participants or the researchers. The general tenor of all groups was very casual. This may be due in part to the setup of the facilitators guide, the familiarity and comfort of the researchers facilitating groups with PWID, and/or the familiarity of participants with each other. The benefits of having a research study on a new and sensitive research area designed and implemented with the support and guidance of PWID cannot be overlooked.

5.5 Limitations
There are several limitations to this study. First, the study used observational data and was not under a randomized, controlled environment. Therefore, the associations described in this research cannot assert causal effects. While I adjusted for confounding factors that were
available in the IDUCS survey and informed by previous research, I cannot ascertain that they are comprehensive and account for all unmeasured confounding. While I cannot infer temporality, I used the qualitative data to understand the order of events to describe the associations.

Second, there were multiple time periods in the IDUCS survey measures. In Chapter 2, the primary explanatory variable of place of injection drug use and receptive sharing of injecting equipment is a measure of reported behavior in the three months preceding the survey. However, general drug use is reported in the past 30 days. The implications of this limitation may be that drug use may not have been occurring the entire past three months, over representing the effect of drug use and its relationship to receptive sharing of injecting equipment (Chapter 2) or public injection drug use (Chapter 3).

Third, our study is unable to determine whether the sharing of injecting equipment actually happened in a public place. While the focus group narratives described aspects of injecting in a public place that would promote receptive sharing, the measures do not indicate where the receptive sharing occurred. We attempted to identify other factors that may promote receptive sharing (i.e. unstable housing, past year arrest) to include in a multivariate model to account for factors identified in the focus group sessions, but the measures are still limited. Future studies on this topic should explicitly ask PWID about receptive sharing of injecting equipment by episode of injection by place of drug use.
Fourth, we were unable to distinguish what drugs were being injected, how often injection occurred, and the prevalence of poly-substance use using the IDUCS survey. The measures were limited to reporting whether a type of drug had been used in the past 30 days (yes versus no) and, if yes, how often; the most frequent option was ‘daily’ which included the majority of heroin and cocaine users. The measures also were unable to distinguished which drugs were being used at the same time, which is relevant to overdose risk. It is likely that more detailed measures of frequency or episodes of injection per day may be related to risk of receptive sharing of injecting equipment merely by increasing the likelihood of injections per day. Understanding how frequency of injection drug use is related to injection-related risk may be related to the likelihood of public injection drug use. Understanding the prevalence of poly-substance use may provide an enhanced understanding of overdose risk. Modifications to these measures to be more comprehensive in documenting drug use behavior may offer additional information to detect subtle differences between drug use type, frequency, and poly-substance use to better assess risk.

Fifth, place of injection drug use is measured as whether participants had ever injected in any of the 10 categories of place in the three months preceding the survey. It is unknown how many times participants injected in which place or where they primarily inject. A participant may inject the majority of the time in their own home but injected a few times in public restrooms, and therefore would be categorized as a ‘public injector’. If my hypothesis that it is public injection that is associated with increased risk behavior, there may be additional sub-categories of public injectors that we were unable to determine with the availability of data and, thus, underestimate the associations between public injection and risk behavior. A modified measure to account for the distribution of where participants inject (e.g. mostly in public, sometimes in public, rarely in
public, never in public) would better explain the association between public injection and risk behavior.

Sixth, the IDUCS survey data and the focus group sessions was a convenience sample and were conducted with PWID who are already engaged in harm reduction services in an urban setting. This may represent a sampling bias. The findings may not be generalizable to PWID who do not receive harm reduction services. There are several ways that the findings may be affected. First, participants who are engaged in harm reduction services have free access to sterile injecting equipment and educational resources. Therefore, the frequencies of reporting receptive sharing of injecting equipment may be lower compared to PWID who do not receive services at a harm reduction site. The level of knowledge of health risks of receptive sharing of injecting equipment may also be higher compared to PWID not connected to harm reduction services. Similarly, the findings may not be generalizable to PWID who are non-urban dwellers. We know from the emerging literature that new populations of injectors live in suburban or rural areas. Access to sterile injecting equipment may be more limited or consist of primarily syringe access via pharmacies. The places where PWID inject in suburban or rural areas may also be different.

Lastly, the findings from the focus group sessions suggest that the concept of a SIF was acceptable to PWID but was not measured in any quantitative way. Acceptability and feasibility studies that involve a more in-depth explanation of SIFs, enrollment, hours of operation, services offered, and other details would be a more appropriate method to assess feasibility and acceptability of a SIF. Our findings support that there is initial interest and that PWID believed
that a SIF may address the barriers to applying safe injection practices, but does not measure potential projections of use.

5.6 Future Research Directions
Since this study is the first of its kind, future research is necessary to replicate in order to better understand the association between public injection and risk behavior in NYC. In addition to addressing the aforementioned limitations, there are several ways to approach this research. First, a prospective study design to test the hypothesis that injecting in a public place is associated with sharing of injecting equipment would ideally include (a) a per-episode report of where an individual injected, whether or not they report receptive sharing of injecting equipment, and who they were with at the time of injection (b) PWID from a variety of geographic locations, (c) PWID engaged and not engaged in SEPs to reduce selection bias, and (d) accounts of other risky injection practices. Our study offers initial insight into themes associated with public injection drug use and risk behavior and future research may serve as pre-implementation research.

Second, to conduct a feasibility and acceptability study of SIFs, a mixed methods approach involving PWID and other stakeholders is necessary. This should include an environment assessment of new cases of HIV and HCV, existing cases of HIV and HCV, prevalence of fatal and non-fatal overdose, and prevalence of public injection drug use. It should also include in-depth interviews with key stakeholders to identify potential barriers to implementation and possible solutions. Logistics and planning of SIF operations should be informed by PWID who would use the services.
Third, we did not conduct a cost-benefit analysis. Our study suggests that public injection drug use is associated with risk behavior that may lead to costly health outcomes. A cost-benefit analysis may replicate the model used in San Francisco\textsuperscript{177} that identified cost-savings due to averting new cases of HIV due to injection drug use. A more robust version of a cost-benefit analysis would include averted HCV infections due to injection drug use and SSTIs cases in the ED.

Lastly, the potential impact of a SIF on existing healthcare reform strategies is unknown. A SIF pilot in partnership with a hospital-based healthcare system in a targeted geographic area may offer insight into how a SIF may promote engagement and retention in services, reduce ED admissions, and save money. International studies offer models for measuring the impact of a SIF. The US may benefit from a pilot study to examine the impact on engagement and retention in support services among high risk PWID.

In conclusion, this research offers an understanding of public injection drug use and the beginnings of developing a public health rationale to establish SIFs. This contribution to the literature may support both NYC and other cities in framing the issue of public injection drug use and implementing new interventions to curb the overdose and HIV/HCV epidemics. As I outlined in my policy recommendations, solutions include SIFs but also require systems-level transformation and reform in drug policy, policing, health care, and housing services. Applying an inter-disciplinary approach to improving these environments and systems for PWID will reduce public injection drug use, prevent risky injection practices and fatal overdose, and, in turn, improve population health.
List of Appendices

Appendix A – Map of IDUHA Study Sites (June 2015 - Phase 3)
Appendix B – IDUCS Survey Domains Overview
Appendix C – IDUCS Survey Instrument
Appendix D – IDUCS Field Interviewer Training Topics
Appendix E – Dissertation Variable Table by IDUCS Domain
Appendix F – Original IDUCS Variables – Table of Missing Variables
Appendix G – IDUCS Variables – Old and New Variables (Coding & Definitions)
Appendix H – IDUCS Group Comparisons (Wave 2 vs. Wave 3)
Appendix I – Focus Group Facilitator Guide
Appendix J – Focus Group Screening Form for Eligibility
Appendix K – Focus Group Consent Form
Appendix L – Focus Group Survey Instrument
Appendix A – Map of IDUHA Study Sites (June 2015 - Phase 3)
Appendix B – IDUCS Survey Domains Overview

### IDUCS Survey Domains

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Socio-demographic and background information</strong></td>
<td>Program and location of interview, background characteristics, and health insurance</td>
</tr>
<tr>
<td><strong>Harm reduction program utilization</strong></td>
<td>Length of time at program and types of services used</td>
</tr>
<tr>
<td><strong>Housing Status</strong></td>
<td>Type and location of housing (past three months)</td>
</tr>
<tr>
<td><strong>Legal status</strong></td>
<td>History of arrest and probation/parole status</td>
</tr>
<tr>
<td><strong>General drug use</strong></td>
<td>Past 30-day drug use by type and frequency, drug treatment</td>
</tr>
<tr>
<td></td>
<td><em>Type:</em> methadone, alcohol, marijuana, cocaine, crack, heroin, methamphetamine, opioids (prescribed/not prescribed), synthetic marijuana(^b), downers, other</td>
</tr>
<tr>
<td></td>
<td><em>Frequency:</em> every day, a few times a week, once a week, less than once a week</td>
</tr>
<tr>
<td><strong>Injection drug use</strong></td>
<td>Injection history, place of injection drug use, sharing of injecting equipment, and syringe access</td>
</tr>
<tr>
<td><strong>Overdose</strong></td>
<td>Overdose history and naloxone knowledge/use</td>
</tr>
<tr>
<td><strong>Medical history and medical service utilization</strong></td>
<td>Primary care provider assignment,¹ use of health services, HIV and hepatitis C testing and status, and other health status</td>
</tr>
<tr>
<td><strong>Mental Health</strong></td>
<td>Use of prescribed medications, experience of mental health symptoms, and coping</td>
</tr>
<tr>
<td><strong>Satisfaction and impact of SEPS(^d)</strong></td>
<td>Satisfaction with SEPS and perceived changes in life domains: housing status, access to food, drug use, access and use of health care, relationships, education related to disease prevention, use of condoms, feelings of control, use of sterile injecting equipment.</td>
</tr>
</tbody>
</table>

¹ Item included in IDUCS-P3 only

² Synthetic cannabis is also known as ‘K2’ or ‘spice’

³ Items asked only if participant reported history of injection drug use

⁴ Participants reporting it was their first time at the SEPS were not asked items in this domain
Appendix C – IDUCS Survey Instrument

IDUHA Phase 3 - 2015
Participant Survey

Survey ID | ___ | ___ | - | ___ | ___ | ___ |
two-digit interviewer ID + three-digit sequential ID ex: 3rd survey for interviewer 
ID 32 \( \rightarrow \) 32-003

Date: ___ / ___ / ___ ___ ___
(mm/dd/yyyy)

Time: _____ : _____ AM/PM

Name of the interviewer: 

Agency:
01 After Hours Project 06 FROST'D at Harlem United 11 SACHR
02 ACQC 07 Housing Works 12 Streetwork
03 BOOM! Health 08 LESHRC 13 VOCAL-NY
04 CHASI 09 NYHRE 14 Washington Heights
05 Family Services Network 10 Positive Health Project CORNER Project
(FSN) (PHP)

Location of Site: ______________________________________ (cross streets, borough)

Where was this survey conducted?
01 Office 02 Street/Walkabout/Backpack 03 Van/Tent/Fixed Unit
04 SRO or Apartment 05 Other (Specify:__________________)

DEMOGRAPHICS

1. What is your age? __________ 88 DK 99 NR

2. How do you consider yourself: male, female, or transgender?
   01 Male 02 Female 88 DK
   03 Trans, Male to Female 04 Trans, Female to Male 99 NR

3. What is your race or ethnicity? (Circle all responses stated)
   01 White 05 Other
   02 Black or African American (Specify:________________________)
   03 Hispanic / Latino 88 DK 99 NR
   04 Asian

4. What language do you speak most often? (Pick ONE)
   01 English 03 Other
   02 Spanish (Specify:________________________) 88 DK 99 NR

5. What is the highest level of education you have completed?
   00 Less than high school 01 High school graduate or GED
   02 Some college, Associate’s Degree, or Technical Degree
   03 Bachelor’s Degree 04 Any postgraduate studies
   88 DK 99 NR

CODE

Since we are not putting your name on this survey, we are going to make a unique code 
that we will use to keep track of your answers. The code will also help us if we do this
research study again in the future because we will be able to know who completes the survey more than once. To make the code, I need to ask you a few questions, okay?

6. What is your . . .?

<table>
<thead>
<tr>
<th>Gender (M, F, or T)</th>
<th>1st Letter First Name</th>
<th>1st Letter Last Name</th>
<th>Day of Birth</th>
<th>Year of Birth</th>
<th>1st Letter Mother Maiden Name</th>
</tr>
</thead>
</table>

INSURANCE

7. Do you currently have medical insurance? *If yes, What kind of insurance is it? (Circle all that apply)*

   00 No insurance *(Skip to Q8)*
   01 Private insurance *(What is the name of it?): ________________________________*
   02 Medicaid
   03 Medicare
   04 TRICARE/CHAMPVA
   05 ADAP 88 DK 99 NR

*If person gives name of insurance or shows you insurance card and you don’t know where it fits, write it in here: ________________________________*
If participant is on Medicaid, ask Q7A, Q7B, Q7C:

**7A. Do you know what type of Medicaid you have? What is the plan called?**

<table>
<thead>
<tr>
<th>Straight Medicaid</th>
<th>Metro Plus</th>
<th>UnitedHealthcare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affinity</td>
<td>MetroPlus Special Needs Plan</td>
<td>VNS Choice SNP</td>
</tr>
<tr>
<td>AmeriGroup</td>
<td>Neighborhood Health Providers WellCare</td>
<td></td>
</tr>
<tr>
<td>Amida Care</td>
<td>New York State Catholic Health</td>
<td></td>
</tr>
<tr>
<td>Health Insurance Plan of Greater New York</td>
<td>Other: ____________________</td>
<td></td>
</tr>
<tr>
<td>HealthFirst</td>
<td>New York-Presbyterian</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community Health Plan</td>
<td></td>
</tr>
</tbody>
</table>

**7B. Is your Medicaid on or off? If it is on, is it restricted?**

- 01 On (active)
- 02 On, restricted
- 03 Pending
- 04 Undergoing recertification

88 DK 99 NR

**7C. Have you been assigned to a Health Home? A Health Home is a centralized location that coordinates medical care for Medicaid patients who have several chronic medical conditions.**

- 00 No (Skip to Q8)
- 01 Yes (Continue to Q7D,E)

88 DK 99 NR

*If Yes to 7C, 7D. Have you already received services at your Health Home?*

- 00 No
- 01 Yes

88 DK 99 NR

*If Yes to 7C, 7E. Have you met with your Care Coordinator at your Health Home?*

- 00 No
- 01 Yes

88 DK 99 NR

SEP AGENCY UTILIZATION

Now I am going to ask you questions about your experience with [AGENCY].

8. Please think about the first time you came to [AGENCY]. You could have come here to this site, or to other sites that are part of [AGENCY]. How long ago was the first time you came to [AGENCY]? <<Remember this!>>

- 01 This is my first time (Skip to Q11)
- 02 0-3 months
- 03 4-6 months
- 04 7-11 months
- 05 1-2 years
- 06 3-5 years
- 07 6+ years

88 DK 99 NR

9. Now I am going to ask you about the services that you have received from [AGENCY] over the past 30 days. I am going to read through several services. I know that some of the services I list are not available at [AGENCY] – so only let me know of services that you have used at [AGENCY]. Please think about services you have used at [AGENCY] during the past 30 days. Okay?

*Ask in this format: “In the past 30 days, did you receive [service] from [AGENCY]?” (y/n)*

*“Where did you receive that – from the office, a van, street outreach?”*
<table>
<thead>
<tr>
<th>Service Description</th>
<th>Yes (Y) or No (N)</th>
<th>Office/ Clinic (X)</th>
<th>Street Outreach (X)</th>
<th>Van/Tent/ Fixed (X)</th>
<th>SRO/ Apt (X)</th>
<th>Other (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Syringe exchange or safer injection supplies</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Overdose prevention training and Narcan (aka naloxone) kit</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Shower, laundry, or clothes</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Drop-in space</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Meet with a Case Manager or Harm Reduction Counselor</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Acupuncture/holistic health services</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. Crisis Intervention, ex: help with becoming homeless, receiving a positive test result</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H. Care for a wound, such an abscess, or foot issue</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Get tested for HIV</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Medical treatment for HIV</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K. Get tested for Hepatitis C</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Medical treatment for Hepatitis C</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M. General Medical Care</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>There are just a few more services I would like to ask you about. Again, please just think about whether you have received these services from [AGENCY] in the past 30 days.</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>N. Groups for support or education</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O. Suboxone</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P. Help with housing placement</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q. Help with insurance benefits</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Help with finding a job</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Peer Training</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T. Educational resources</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U. Meals (food and nutrition services)</td>
<td>Y / N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V. Other (specify):</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
10. Is there somebody at [AGENCY] that you consider to be your Case Manager or Harm Reduction Counselor?

00 No 01 Yes 88 DK 99 NR

Great, your answers have been really helpful so far. The questions are going to start to get a little bit more personal now. I want to remind you that this survey is completely confidential. Your name is not written on the survey, and no one can trace your answers back to you. We really appreciate your honesty. Your answers will help get the best information, so we can help the community and provide the best services. Okay?

HOUSING

11. In the past 3 months, where have you been staying? You might say that you have been sleeping in a park, a shelter, a friend’s apartment, your own home . . . Where have you been sleeping most often? (If respondent offers more than one response, PROBE: “If you had to pick the one place you slept the MOST OFTEN, where would it be?”)

Circle ONE code that best matches their response
Public place: street, park, subway, bus station, ATM lobby, building stairwell, roof, or basement
02 Shelter for homeless people
03 Jail or prison
04 SRO (single room occupancy facility) or a welfare hotel or motel
05 Drug treatment or a program
06 Three-quarter housing
07 Non-drug treatment setting: supportive housing or transitional housing
08 Rooming with others: in someone else’s house, apartment, or room
09 Your own place, apartment, or a house that is your home. (Clarify: Do you pay rent? Do you have your own lease?)
10 Hospital, nursing home, or hospice
11 Someplace else (Specify: ____________________________)

88 DK 99 NR

12. Where is this? Do you know the zip code? If not, can you tell me the cross streets? (Best answer is zip code. If can’t get zip code, get cross streets. If can’t, get neighborhood)

_________________________________________ 88 DK 99 NR
LEGAL STATUS

13. Have you been arrested or incarcerated in the past year?
00 No (Skip to Q14) 01 Yes (Ask Q13A) 88 DK 99 NR
If Yes to 13, 13A. Okay, how would you describe your status? Are you currently on probation, on parole, awaiting trial . . .? (Say options out loud!)
01 On probation only 02 On parole only 03 On probation and parole (Specify: ___________________) 04 Awaiting charge, trial, sentence 88 DK 99 NR
05 Outstanding warrant

GENERAL DRUG USE

Now I’m going to ask you about drug use. I am going to ask you whether you have used drugs, and then how often you use them. I know these are personal questions, so I really appreciate your being honest with me.
Ask in this format: “In the past 30 days, did you use methadone?” (y/n) “How often did you use it?” (then you code their response as 1-4)

<table>
<thead>
<tr>
<th>14. In the past 30 days, did you use [item]?</th>
<th>15. How often did you use [drug]?</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Yes, ask Q14</td>
<td>1 = Everyday</td>
</tr>
<tr>
<td></td>
<td>2 = A few times a week</td>
</tr>
<tr>
<td></td>
<td>3 = Once a week</td>
</tr>
<tr>
<td></td>
<td>4 = Less than once a week</td>
</tr>
<tr>
<td>A Methadone 00 No 01 Yes</td>
<td>1</td>
</tr>
<tr>
<td>B Alcohol 00 No 01 Yes</td>
<td>2</td>
</tr>
<tr>
<td>C Marijuana 00 No 01 Yes</td>
<td>3</td>
</tr>
<tr>
<td>D Cocaine 00 No 01 Yes</td>
<td>4</td>
</tr>
<tr>
<td>E Crack 00 No 01 Yes</td>
<td>1</td>
</tr>
<tr>
<td>F Heroin 00 No 01 Yes</td>
<td>2</td>
</tr>
<tr>
<td>G Methamphetamine: ice, tina, crank, crystal 00 No 01 Yes</td>
<td>3</td>
</tr>
<tr>
<td>H Other opiates, such as: Other: Other: 00 No 01 Yes</td>
<td>4</td>
</tr>
<tr>
<td>I Synthetic marijuana (“K2,” “Spice”) 00 No 01 Yes</td>
<td>1</td>
</tr>
</tbody>
</table>

6/7/17
14. In the past 30 days, did you use [item]?  
*If Yes, ask Q14*

<table>
<thead>
<tr>
<th>J</th>
<th><strong>Downers</strong>: Benzos: Valium, Ativan, Xanax</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 No 01 Yes</td>
<td></td>
</tr>
</tbody>
</table>

15. How often did you use [drug]?  

<table>
<thead>
<tr>
<th>1 = Every day</th>
<th>2 = A few times a week</th>
<th>3 = Once a week</th>
<th>4 = Less than once a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>K</td>
<td>Any other drugs that we haven’t talked about, such as PCP, hallucinogens, ‘Club drugs’; BathSalts (cathinones)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>00 No 01 Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Are you currently enrolled in a methadone program?  
00 No 01 Yes 88 DK 99 NR

17. In the past 30 days, have you taken methadone that was not prescribed to you? Maybe that you bought in the street or a friend gave it to you?  
00 No 01 Yes 88 DK 99 NR

18. Are you currently being prescribed Buprenorphine/“Bupe”/Suboxone/Subutex?  
00 No 01 Yes 88 DK 99 NR

19. In the past 30 days, have you taken Buprenorphine/Bupe that was not prescribed to you? Maybe that you bought in the street or a friend gave it to you?  
00 No 01 Yes 88 DK 99 NR

INJECTION DRUG USE

20. Have you ever injected any drugs? *(PROBE, if needed: This could be by mainlining, skin popping, or muscling.)* <<Remember this!>>

<table>
<thead>
<tr>
<th>00 No</th>
<th>(Skip to Q30 - Overdose)</th>
<th>01 Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>88 DK 99 NR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. How old were you the first time you injected drugs?  
________ 88 DK 99 NR

22. During the past 3 months, have you injected any drugs?  
00 No (Skip to Q30 - Overdose) 01 Yes 88 DK 99 NR

23. We are trying to understand where people are in the community when they inject drugs. I am going to mention some locations, and you can say “Yes” or “No.” So, please think about places that you have been when you injected in the past 3 months.

<table>
<thead>
<tr>
<th>In the past 3 months, did you inject in a . . .</th>
<th>No</th>
<th>Yes</th>
<th>DK</th>
<th>NR</th>
</tr>
</thead>
</table>
If they mentioned more than one place in Q23:

23A. You just mentioned several places where you have injected in the past 3 months. Of those, which location did you inject the most?

_______ (Write in item letter, e.g. street = A) 99 NR

24. We are also trying to understand where people get their syringes. I am going to list some places. Please say “Yes” or “No” to if you got syringes there in the past 3 months.

<table>
<thead>
<tr>
<th>In the past 3 months, did you get your syringes from . . .</th>
<th>No</th>
<th>Yes</th>
<th>DK</th>
<th>NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syringe Exchange Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Which one(s)? 1) ______________________________</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) ______________________________</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) ______________________________</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A pharmacy or drug store</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A doctor’s office, clinic, or hospital</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From a friend, acquaintance, relative, or partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchased from someone on the street or in a shooting gallery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some other place that we haven’t talked about? Specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
25. We know that sometimes people don’t have access to new, sterile syringes. In the past 3 months, was there ever a time where you needed to inject but did not have a new, sterile syringe? If Yes, How recently was that? (Don’t read the time options out loud, just code based on what they say)

No (Skip to Q26)
Yes, within the past 24 hours
Yes, within the past week
Yes, within the past month
Yes, between one and three months ago
If Yes to 25, 25A. Think about the last time this happened. Where were you? Can you tell me the closest cross streets?

Cross streets: ______________________________________________________

If Yes to 25, 25B. What time of day was it? __________ AM/PM

26. In the past 3 months, have you injected with a syringe that someone else had already used?

00 No 01 Yes (Ask Q26A) 88 DK 99 NR

If Yes to 26, 26A. How often would you say this happened?

01 All of the time 02 Most of the time 03 Some of the time 04 Rarely

88 DK 99 NR

27. In the past 3 months, did you use a cooker that someone else had already used?

00 No 01 Yes (Ask Q27A) 88 DK 99 NR

If Yes to 27, 27A. How often would you say this happened?

01 All of the time 02 Most of the time 03 Some of the time 04 Rarely

88 DK 99 NR

28. In the past 3 months, did you use a cotton that someone else had already used?

00 No 01 Yes (Ask Q28A) 88 DK 99 NR

If Yes to 28, 28A. How often would you say this happened?

01 All of the time 02 Most of the time 03 Some of the time 04 Rarely

88 DK 99 NR

29. In the past 3 months, did you use water to inject that someone else had already used?

00 No 01 Yes (Ask Q29A) 88 DK 99 NR
If Yes to 29. 29A. How often would you say this happened?

01 All of the time   02 Most of the time   03 Some of the time   04 Rarely

OVERDOSE

These next questions are about drug overdose.

30. In your life, have you ever used drugs so strong they caused you to overdose?

00 No   01 Yes (Ask Q30A)   88 DK   99 NR

If Yes to 30, 30A. Have you overdosed within the past year?

00 No   01 Yes   88 DK   99 NR

31. In the past year, have you witnessed someone else having an overdose?

00 No   01 Yes   88 DK   99 NR

32. Do you know what Narcan or naloxone is?

00 No   01 Yes   99 NR

Narcan is used to prevent overdose. It comes in a blue bag and can be injected or sprayed up the nose.

33. Do you know where to get a Narcan kit?

00 No   01 Yes   99 NR

34. If you needed a Narcan kit, do you think it would be easy or difficult to get one? Would you say Somewhat or Very?

01 Very Easy   02 Somewhat Easy   03 Not Sure
04 Somewhat Difficult   05 Very Difficult   99 NR

35. Have you ever used Narcan on somebody you thought was having an overdose from opiates, like heroin?

00 No   01 Yes   88 DK   99 NR
MEDICAL HISTORY AND MEDICAL SERVICE UTILIZATION

Thank you for all of your responses so far, we are making great progress. Now we are going to talk about your health.

36. Do you have a Primary Care Provider? That is, a doctor that you go to if you need something that isn't an emergency?

00 No 01 Yes 88 DK 99 NR

If yes to 36, 36A. Have you visited your Primary Care Physician in the past year?

00 No 01 Yes 88 DK 99 NR

I am going to list off some medical services – please let me know if you have used these services in the past year.

Ask whether they have received each type of service. If Yes, ask Q38: how many times in the past year they used this service.

<table>
<thead>
<tr>
<th>37. In the past year, have you</th>
<th>No</th>
<th>Yes</th>
<th>DK</th>
<th>NR</th>
<th>If Yes to 37, 38. How many times in the past year?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Been admitted to an Emergency Room</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
<tr>
<td>Stayed in the hospital overnight</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of nights ________</td>
</tr>
<tr>
<td>Ridden in an ambulance</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
<tr>
<td>Stayed in residential drug treatment</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
<tr>
<td>Went to short-term Detox</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
<tr>
<td>Been hospitalized for psychiatric reasons</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
<tr>
<td>Gone to the emergency room for something that wasn’t an emergency?</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
<td># of times ________</td>
</tr>
</tbody>
</table>

39. Have you ever been tested for Hepatitis C?

00 No (Skip to Q40) 01 Yes (Ask Q39A,B) 88 DK 99 NR

If Yes to 39, 39A. When was your most recent Hepatitis C test?

00 Within the past 6 months
01 Within the past year
02 More than a year ago 88 DK 99 NR

If Yes to 39, 39B. What was the result of your most recent Hepatitis C test?

00 Negative (non-reactive) (Skip to Q40)
01 Positive (reactive) (Ask 39C)
02 Undetermined 88 DK 99 NR

If Positive, ask Q39C,D,E:

39C. Have you discussed Hepatitis C treatment options with your doctor?
39D. How informed do you feel about your Hepatitis C treatment options?

00 Not at all  01 A little  02 Somewhat  03 Well informed
88 DK  99 NR

39E. Are you currently in treatment or have you completed treatment for Hepatitis C?

00 No  01 Yes  88 DK  99 NR

If No to Q39E, 39F. What is the main reason you haven’t started treatment?

________________________________________________________________________

Now I am going to list some medical conditions that are common in the community. Please let me know whether you have ever been diagnosed with each condition.

40. Has a doctor ever told you that you have . . . (Circle ALL that apply)

<table>
<thead>
<tr>
<th>Condition</th>
<th>00</th>
<th>01</th>
<th>88</th>
<th>99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Disease</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hypertension / High blood pressure</td>
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<tr>
<td>Liver Disease (Hep C, cirrhosis)</td>
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</tr>
<tr>
<td>Kidney Disease</td>
<td></td>
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<tr>
<td>Cancer</td>
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</tr>
</tbody>
</table>

41. Have you ever been tested for HIV?

00 No (Skip to Q42)  01 Yes (Ask Q41A,B)  88 DK  99 NR
If Yes to 41, 41A. When was your most recent HIV test?
00 Within the past 6 months
01 Within the past year
02 More than a year ago 88 DK 99 NR

If Yes to 41, 41B. Have you ever been diagnosed with HIV or AIDS?
00 No (Skip to Q42) 01 Yes (Go to Q41C) 88 DK 99 NR

41C. How long ago were you diagnosed with HIV?
00 Within the past 6 months
01 7-11 months ago
02 1-5 years ago 88 DK
03 More than 5 years ago 99 NR

41D. Are you currently taking antiretroviral medications for your HIV?
00 No (Skip to 41F) 88 DK
01 Yes (Ask 41E) 99 NR

41E. How often do you take your antiretroviral medications? Would you say that you...(read answer choices)
01 Often miss doses
02 Take it most days but sometimes miss doses 99 NR
03 Take it every day

41F. Do you currently receive benefits or are enrolled as a client in HASA? (PROBE: HASA is the NYC HIV/AIDS Services Administration)
00 No 01 Yes 88 DK 99 NR

If Yes to Q41F, 41G. Do you currently receive HASA rental assistance?
00 No 01 Yes 88 DK 99 NR

MENTAL HEALTH

We are getting close to the end of the survey, thanks for sticking with me. These questions are about your mental health, and what you do to help yourself feel better.

42. In the past 3 months, has a doctor prescribed medication to you for psychological or emotional problems?
00 No 01 Yes 88 DK 99 NR

43. In the past 3 months, have you experienced...
Ask each item. If the participant responds “Sometimes” or “Often”, ask Q44 about coping

<table>
<thead>
<tr>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>If Sometimes or Often</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
44. Are you using drugs and/or alcohol to cope with this?

<table>
<thead>
<tr>
<th>Condition</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03 Alcohol &amp; Drugs</th>
<th>04 Prescription drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious depression</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>00 No</td>
<td>01 Alcohol 02 Drugs</td>
</tr>
<tr>
<td>Serious anxiety or tension</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>00 No</td>
<td>01 Alcohol 02 Drugs</td>
</tr>
<tr>
<td>Hallucinations (hearing or seeing things that others thought were imaginary)</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>00 No</td>
<td>01 Alcohol 02 Drugs</td>
</tr>
<tr>
<td>Trouble understanding, concentrating, or remembering</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>00 No</td>
<td>01 Alcohol 02 Drugs</td>
</tr>
<tr>
<td>Trouble controlling violent behavior</td>
<td>00</td>
<td>01</td>
<td>02</td>
<td>00 No</td>
<td>01 Alcohol 02 Drugs</td>
</tr>
</tbody>
</table>

If Sometimes/Often to any of 43A-E, 45. In the past 3 months, have you gotten prescription medications from a friend or off the street to deal with these feelings?

- 00 No
- 01 Yes
- 88 DK
- 99 NR

46. Since you enrolled at [AGENCY], have you gone to the agency for a health or emotional issue that in the past you would have otherwise gone to the emergency room for?

- 00 No
- 01 Yes
- 88 DK
- 99 NR

47. In general, how would you rate your overall health? Would you say it is...

- 01 Poor
- 02 Fair
- 03 Good
- 04 Very Good
- 05 Excellent
- 88 DK
- 99 NR

IMPACT OF AGENCY

*(IF IT IS THE PARTICIPANT’S FIRST TIME AT THE AGENCY (Q8), SKIP TO Q50.)*

These are the last set of questions. I am going to be asking you about your experiences since you came to [AGENCY]. Please be as honest as you can. Your answers will help us to improve the services for the community.

48. You told me you first came to [AGENCY] ____ months/years ago (response from Q8). I would like to know how your life has changed since then. I am going to ask you about different parts of your life – please tell me whether they are Much Better, Somewhat Better, Somewhat Worse, or Much Worse since you first came to [AGENCY]. If there has been no change, you can say, “No Change.”
<table>
<thead>
<tr>
<th>How has your [item] changed?</th>
<th>Much better</th>
<th>Somewhat better</th>
<th>No Change</th>
<th>Somewhat worse</th>
<th>Much worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing situation</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Access to food</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Drug use</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Feeling like you have access to health care</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Use of health care</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Relationship with friends/family</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Understanding of how diseases are prevented</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Use of condoms or other safer sex supplies</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
<tr>
<td>Feeling that you have control over your life</td>
<td>05</td>
<td>04</td>
<td>03</td>
<td>02</td>
<td>01</td>
</tr>
</tbody>
</table>

**If participant has ever injected drugs (Q20)**

[If IDU] Use of new, sterile syringes | 05 | 04 | 03 | 02 | 01 |
[If IDU] Use of safer injection supplies | 05 | 04 | 03 | 02 | 01 |
49. Overall, how satisfied are you with the services and care you have received at [AGENCY]?
   Are you… (Read each option out loud)

   01 Very satisfied
   02 Somewhat satisfied
   03 Neither satisfied nor dissatisfied
   04 Somewhat dissatisfied
   05 Very dissatisfied
   88 DK       99 NA
50. If you could add one service that is not currently available at [AGENCY], what would it be?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

51. Do you have any other comments that you would like to share with me about [AGENCY]?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

This is the end of the survey, thank you so for your time and your help. We all really appreciate it.

52. Interviewer comments (relevant to research team or to data integrity)

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
Appendix A. Overview of field interviewer training session topics

<table>
<thead>
<tr>
<th>Training Topic</th>
<th>Overview of contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harm reduction history (30 min)</td>
<td>• Development of the harm reduction movement and community organizing</td>
</tr>
<tr>
<td></td>
<td>• Review of research on syringe exchange</td>
</tr>
<tr>
<td></td>
<td>• US drug policy</td>
</tr>
<tr>
<td></td>
<td>• Racial disparities and inequity</td>
</tr>
<tr>
<td>Harm reduction programs (30 min)</td>
<td>• Overview of IDUHA and programs in NYC</td>
</tr>
<tr>
<td></td>
<td>• Services offered</td>
</tr>
<tr>
<td></td>
<td>• Low-threshold model of services and site locations</td>
</tr>
<tr>
<td></td>
<td>• Role of peer educators</td>
</tr>
<tr>
<td>Study overview (30 min)</td>
<td>• Purpose of study</td>
</tr>
<tr>
<td></td>
<td>• Timeline and logistics for field interviewers</td>
</tr>
<tr>
<td>Returning field interviewers (30 min)</td>
<td>• Field interviewers invited to return to share their highlights and lessons learned from their experience</td>
</tr>
<tr>
<td>Working with drug users (30 min)</td>
<td>• Overview of why people use drugs</td>
</tr>
<tr>
<td></td>
<td>• Experiences with providers</td>
</tr>
<tr>
<td></td>
<td>• Language and interaction</td>
</tr>
<tr>
<td></td>
<td>• Boundary setting and safety</td>
</tr>
<tr>
<td>Peer interaction (100 min)</td>
<td>• Advice from peer educators about appropriate dress, appearance, first impressions</td>
</tr>
<tr>
<td></td>
<td>• Building rapport with participants</td>
</tr>
<tr>
<td></td>
<td>• Role plays of how to approach participants, engagement, addressing challenging situations</td>
</tr>
<tr>
<td>Question &amp; answer (30 min)</td>
<td>• Questions from field interviewers on any of the topics</td>
</tr>
<tr>
<td>Review of the study findings (30 min)</td>
<td>• Findings from the previous study wave</td>
</tr>
<tr>
<td>Survey research methods (60 min)</td>
<td>• 3 functions of the interviewer</td>
</tr>
<tr>
<td></td>
<td>○ Locate,</td>
</tr>
<tr>
<td></td>
<td>○ Motivate</td>
</tr>
<tr>
<td></td>
<td>○ Probe</td>
</tr>
<tr>
<td></td>
<td>• Reliability and validity</td>
</tr>
<tr>
<td></td>
<td>• Survey design – what to read out loud, skip patterns, how to field code responses, probing techniques</td>
</tr>
<tr>
<td>Informed consent (30 min)</td>
<td>• Overview of informed consent and how to obtain it</td>
</tr>
<tr>
<td>QXQ of survey (120 min)</td>
<td>• Review of survey instrument question by question (QXQ)</td>
</tr>
<tr>
<td></td>
<td>• Importance of completion</td>
</tr>
<tr>
<td></td>
<td>• How to address skipping questions or no response</td>
</tr>
<tr>
<td>Survey practice (105 min)</td>
<td>• Interactive group session where each field interviewer answered questions regarding skip patterns, case</td>
</tr>
</tbody>
</table>
### Scenarios of how to code responses, practice asking questions

| Prep for site visit (15 min) | • Overview of what field interviewers should expect for their day onsite  
|                           | • Distribution of surveys for administration with friends to practice at home |
| Site visit (180 min)       | • Field interviewers spent a minimum of 3 hours with the program site liaison to become familiar with surroundings |
| Site visit report back (60 min) | • Field interviewers shared their experiences from the site visit  
|                           | • Discussion of space challenges, personnel and safety at sites |
| Survey administration report back (60 min) | • Field interviewers described their experience delivering the survey to their friend  
|                           | • Practice of specific questions related to injection history and gender identity |
| Challenges & Boundaries (90 min) | • How to address challenges before, during or after interviews  
|                           | • Handling difficult interviews and strategies to re-engage  
|                           | • Role play of challenging interviewees |
| Study materials (45 min)    | • Overview of contents of field interviewer binder  
|                           | • Overview of procedures for obtaining consent  
|                           | • Material storage  
|                           | • Emergency contact information |
| Scheduling & Survey Period Logistics (90 min) | • Review of each site schedule  
|                           | • Review of contact information  
|                           | • Distribution of incentives  
|                           | • Quality control and storage of surveys |
| Follow up phone sessions (varied) | • Follow up calls with MEC assigned contact or study coordinator on a weekly basis to address unanswered questions |
| Data Entry Training (360 minutes) | • Review of survey instrument  
|                           | • Handling missing responses  
|                           | • Documentation of missing responses  
|                           | • Review of quality assurance log  
|                           | • Steps for data entry into database  
|                           | • Cross check procedures  
|                           | • Storage of entered surveys |
Appendix E – Dissertation Variable Table by IDUCS Domain

Original IDUCS survey variables by domain (response options)

Socio-demographic and background information
1. Age (continuous)
2. (Male, Female, Trans Male to Female, Trans Female to Male)
3. Race/Ethnicity (Black, white, Latinx, Other)
4. Primary language (English, Spanish, Other)
5. Health insurance (Public, Private, None)

Housing Status
6. Type and location of housing (past three months) (Street-homeless, unstably housed, stable)

Legal status
7. Past year arrest or incarceration (Yes/No)

General drug use
8. Past 30-day drug use by type of drug (Yes/No)\(^a\)
9. Currently enrolled in methadone drug treatment program (Yes/No)
10. Currently enrolled in a buprenorphine drug treatment program (Yes/No)
11. Taken non-prescribed methadone past 30 days (Yes/No)
12. Taken non-prescribed buprenorphine past 30 days (Yes/No)
\(^a\) Type: methadone, alcohol, cocaine, crack, heroin, methamphetamine, opioids, downers

Injection Drug Use
13. Injection drug use in the past 30 days (Yes/No)
14. Place(s) of injection drug use in the past 30 days (Yes/No)
   a. Street or park\(^*\)
   b. A stairwell\(^*\)
   c. Abandoned building\(^*\)
   d. Public bathroom\(^*\)
   e. Bus, Subway or Train\(^*\)
   f. Car or vehicle\(^*\)
   g. Bathroom of a syringe exchange program\(^*\)
   h. Shooting gallery\(^*\)
   i. Home of a friend or family member
   j. Your own home
15. Syringe source – where did you get syringes in the past 3 months? (Yes/No)
   a. Syringe exchange
   b. Pharmacy
   c. Doctors office
   d. Friend or acquaintance
   e. Purchased from the street
16. Receptive sharing of a syringe in the past 3 months (Yes/No)
17. Receptive sharing of a cooker in the past 3 months (Yes/No)
18. Receptive sharing of a cotton in the past 3 months (Yes/No)
* Defined as places of public injection drug use for primary variable

**Overdose**

19. Ever overdose in your life (Yes/No)
20. Past year overdose (Yes/No)
21. Witness an overdose in the past year (Yes/No)

**Medical history and medical service utilization**

22. Have you been admitted to the emergency department (ED) in the past year? (Yes/No)
23. Do you have a primary care provider (PCP)? (Yes/No)
24. Hepatitis C status (Positive, Negative, Unknown)
25. HIV status (Positive, Negative, Unknown)

**Mental Health**

26. Experienced depression in the past 3 months (Yes/No)
27. Experienced anxiety in the past 3 months (Yes/No)
28. Experienced hallucinations in the past 3 months (Yes/No)
### Original IDUCS variables - Missing by Variable

<table>
<thead>
<tr>
<th>Domain</th>
<th>Measure</th>
<th>Question</th>
<th>Variable Name</th>
<th>Categories</th>
<th>Code</th>
<th>NR</th>
<th>DK</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Age</td>
<td>What is your age?</td>
<td>Age</td>
<td>Continuous</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>How do you consider yourself: male, female, or transgender?</td>
<td>Gender</td>
<td>Male</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Female</td>
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<td>Trans, M to F</td>
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<td>Trans, F to M</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>What is your race or ethnicity?</td>
<td>RaceEth</td>
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<td>black/AA</td>
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<td>Latino</td>
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<td></td>
<td>Other</td>
<td>4</td>
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<tr>
<td>Language</td>
<td>What language do you speak most often? Pick ONE</td>
<td>Language</td>
<td>English</td>
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<td>0</td>
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<td>1</td>
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<td></td>
<td></td>
<td>Other</td>
<td>3</td>
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</tr>
<tr>
<td>Insurance</td>
<td>Do you currently have medical insurance?</td>
<td>HealthInsType</td>
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<td>1</td>
<td>0</td>
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<td></td>
<td></td>
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<td></td>
<td>Public (Medicaid, Medicare)</td>
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</tr>
<tr>
<td>Housing</td>
<td>Housing Status</td>
<td>Sleep_cat</td>
<td>Street-homeless</td>
<td>Unstably housed</td>
<td>Stably housed</td>
<td></td>
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</tr>
<tr>
<td>In the past three months, where have you been staying? You might say that you have been sleeping in a park, a shelter, a friend's apartment, your own home… where have you been sleeping MOST often?</td>
<td>Sleep_cat</td>
<td>Street-homeless</td>
<td>Unstably housed</td>
<td>Stably housed</td>
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<td></td>
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<tr>
<td>Legal</td>
<td>Arrest</td>
<td>Have you been arrested or incarcerated in the past year?</td>
<td>Arrested</td>
<td>No</td>
<td>Yes</td>
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<td></td>
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<tr>
<td>General Drug Use</td>
<td>Alcohol</td>
<td>In the past 30 days, did you use ____?</td>
<td>AlcoholYN</td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Methadone</td>
<td>In the past 30 days, did you use ____?</td>
<td>MethadoneYN</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Cocaine</td>
<td>In the past 30 days, did you use ____?</td>
<td>CocaineYN</td>
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<td>Yes</td>
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<td>Crack</td>
<td>In the past 30 days, did you use ____?</td>
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<tr>
<td>Heroin</td>
<td>In the past 30 days, did you use ____?</td>
<td>Yes</td>
<td>1</td>
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<tr>
<td></td>
<td>Yes</td>
<td>1</td>
<td></td>
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<tr>
<td>Methamphetamine</td>
<td>In the past 30 days, did you use ____?</td>
<td>Yes</td>
<td>1</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Other opiates</td>
<td>In the past 30 days, did you use ____?</td>
<td>Yes</td>
<td>1</td>
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<td>OpiYN</td>
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<tr>
<td>Downers</td>
<td>In the past 30 days, did you use ____?</td>
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<td></td>
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<td>Methadone Program</td>
<td>Are you currently enrolled in a methadone program?</td>
<td>Yes</td>
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</tr>
<tr>
<td>Non-prescribed methadone</td>
<td>In the past 30 days, have you taken methadone that was not</td>
<td>No</td>
<td>0</td>
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<td>Shooting gallery</td>
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<td>Home of a friend, family member or partner</td>
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<td>Your Own Home</td>
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**Injected Most Often**

You mentioned several places where you have injected in the past 3 months. Of those, which location did you inject the most?

**Syringe Source**

In the past 3 months, did you get your syringes from…

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<td>Question</td>
<td>Syringe or drug</td>
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<td>2</td>
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<td>----</td>
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<td>Pharmacy or drug</td>
<td>SyrPharm</td>
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<td>Doctors office</td>
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<td>0</td>
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<tr>
<td>Friend, acquaintance, relative or partner</td>
<td>SyrFriend</td>
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<td>Purchased from someone on the street or in a shooting gallery</td>
<td>SyrStreet</td>
<td>1</td>
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<td><strong>Sharing of Injecting Equipment</strong></td>
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<td>9</td>
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<td>In the past 3 months, have you injected with a syringe that someone else had already used?</td>
<td>Used Syringe</td>
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<td>In the past 3 months, have you injected with a cooker that someone else had already used?</td>
<td>UsedCooker</td>
<td>1</td>
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<td>In the past 3 months, have you injected with a cotton filter that someone else had already used?</td>
<td>UsedCotton</td>
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<td>1</td>
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<td>Lifetime overdose</td>
<td>ODEver</td>
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<td>0</td>
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<td>1</td>
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<td>6</td>
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<tr>
<td>Have you overdosed in the past year?</td>
<td>ODPastYear</td>
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<td>0</td>
<td>6</td>
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<td>In the past year, have you witnessed someone else having an overdose?</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Medical History</td>
<td>Emergency Room</td>
<td>In the past year, have you visited or received services in the emergency room?</td>
<td>ERYN</td>
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<td>0</td>
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<td></td>
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<td>Primary Care Provider*</td>
<td>PrimaryCareYN</td>
<td>Do you have someone you consider your primary care provider?</td>
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<td>No</td>
<td>0</td>
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<td>Mental Health</td>
<td>Depression</td>
<td>In the past 3 months, have you experienced depression never, sometimes, or often?</td>
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<td></td>
<td></td>
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<td>Anxiety</td>
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<td>Anxiety</td>
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<td>0 4 0</td>
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<td></td>
<td>Sometimes</td>
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<tr>
<td></td>
<td>Often</td>
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</table>

| Hallucinations | In the past 3 months, have you experienced hallucinations (seeing or hearing things that others thought were not real) never, sometimes, or often? | Hallucination | Never | 0 6 0 | 4 |
|----------------|-----------------------------------------------------------------------------|---------------|-------|---|
|                | Sometimes                                                                    |               | 1 |
|                | Often                                                                        |               | 2 |

*Only asked in Phase 3*
### New Variables

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<td>Age</td>
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<td>General Drug Use</td>
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<td>Abandoned building</td>
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<tr>
<td>Public Bathroom, like in a restaurant or train station</td>
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<tr>
<td>Bus, Subway or Train</td>
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<td>Car or vehicle</td>
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<td>Bathroom of a Syringe Exchange Program</td>
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<td>Shooting gallery</td>
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<td><strong>Private Injector</strong></td>
<td><strong>If only injected in either</strong></td>
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<td>Your Own Home</td>
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<td><strong>Count of injection categories</strong></td>
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<td><strong>Count Reuse</strong></td>
<td>In the past 3 months, have you injected with a syringe that someone else had already used?</td>
<td><strong>CountReuse</strong></td>
<td>Range 0-3</td>
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<td><strong>Any Reuse</strong></td>
<td>Reuse of syringe, cooker, or cotton</td>
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## Appendix H – IDUCS Group Comparisons (Wave 2 vs. Wave 3)

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<th>p-value</th>
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</thead>
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<td>0.916</td>
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<table>
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<tr>
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Appendix I – Focus Group Facilitator Guide

Facilitators Guide for Public Injection & SIF Focus Groups

Intro: Ground Rules and Purpose of the Study (~3 minutes)
Survey
Introduce facilitators
Ground Rules

Purpose of the research: As you may remember, the Injection Drug Users Health Alliance (IDUHA) conducted a survey among all 14 syringe exchange programs to better understand the needs of our community. In that survey, we asked specifically about where individuals were using drugs and broke it down by type of location. We are interested in learning from you, as a participant of [ORGANIZATION], what about a space makes it safe or unsafe for injection drug use.

Part 1: Unique risks by location (~15 minutes)
I’m interested in learning about what kinds of spaces people use drugs in, specifically inject drugs in, and what makes it safe and unsafe about injecting in different types of locations.

When I say “safe for injection drug use”, what do you think of? What makes a space “safe”? What makes a space “unsafe”? What is an ideal location for injection drug use?

I’m going to show you a series of photos of different spaces and I’d like to talk about what you see that is safe and/or unsafe about the space.

[Photo of studio apartment, nobody inside]
[Photo of subway platform]
[Photo of syringe exchange program bathroom from organization]
[Photo of room inside an apartment]
[Photo of park/under bridge]
[Photo of McDonald’s restroom]

For each photo, ask the following questions:
What do you see that is safe about this space for injection?
What do you see that is unsafe about this space for injection?
Under what circumstances would you inject in this location?
When would it be the best option?
What might they be thinking about while they were injecting in this location?
Do you think the risk of overdose is higher or lower in this location compared to others? Please explain.

Thanks for sharing so far. I’m going to share a scenario with out about someone who is trying to choose a location to inject.

[Facilitator reads aloud the following vignette]
Dani has spent the majority of the morning trying to get money to buy a few bags to get straight. It’s 2pm and Dani could inject in the Burger King bathroom 5 blocks away, behind a tree in that park across the street, or go to their friends house 10-minute walk away.

How would Dani decide where to inject? Why?
What may influence Dani’s decision?
What do you think is the safest of the options?
Why is it the most safe? Why?
What location is the most unsafe? Why?

Who were you picturing when you thought about Dani?
Was Dani male, female or transgender?
Does Dani’s gender make a difference in what location may be safer for injection drug use? If so, how or why?
How old is Dani?
Does Dani’s age make a difference in what location may be safer for injection drug use? If so, how or why?
What is Dani’s race/ethnicity?
Does Dani’s race/ethnicity make a difference in what location may be safer for injection drug use? If so, how or why?

Part 2: Understanding perception of access to safe locations for use (~10 minutes)
From the survey that I was talking about before, about one-third of the individuals who participated in the survey said that they had injected drugs in the last three months. Of those people, more than half said they had injected in a public place. But what makes a place “public”?

What does a “public place” mean to you?
What makes it “public”?
What does a “private place” mean to you?
What makes it “private”?

Many people in our survey last summer reported that they injected in bathrooms of restaurants, syringe exchange programs, and bus stations.

Do you consider a bathroom a “public” place? What makes it public or private?

Let’s think about the different kinds of bathrooms where people inject. Why would someone use a bathroom for injection?
What are some of the similarities between a syringe exchange program bathroom and another type of public restroom?
What are some of the differences between a syringe exchange program bathroom and another type of public restroom?

Part 3: Attitudes towards safer injection facilities (~15 minutes)
Now I’m going to introduce you to a program that offers a space for individuals to inject drugs out in the open. This program is called “InSite” and is located in Vancouver, Canada. The program is a “supervised injection facility” where individuals can bring their own drugs and they can inject them inside the program.
[Show 2 minute video of introduction to InSite, including stalls/booths for injection]

How did seeing this program make you feel? Initial reactions?
What do you see?
What is different about this compared to what you currently have?
What do you like? What do you not like?

How is that program similar to [ORGANIZATION]?
How is that program different than [ORGANIZATION]?

What would happen if stalls and medical staff were added to [ORGANIZATION] to allow individuals to inject onsite?
  
  What would be safer?
  What would be less safe?

Is this something that you believe others at [ORGANIZATION] would use? Is this something that you would use if it were available?

Part 4: Wrap Up (~5 minutes)

Is there anything else that anyone wants to share at this time?
Anything else that comes to mind?

Thank you for all of your feedback! I’ll be returning in the Fall of this year (October 2015) to share the results of these focus groups with you. I may also want to check in with individuals between now and then to be sure that what I’m writing about is reflective of what you shared. If that is something you’d be open to, please share your name and contact information with me by filling out the form I’m passing around. If you aren’t interested in follow up later, that is ok – just don’t fill out a form.

Remind participants that contact information for researchers provided on written consent form for follow up
Appendix J – Focus Group Screening Form for Eligibility

Public Injection Focus Group Recruitment

In-Person Drop-In Center Script for Convenience Sampling

“Hi! We are hosting a focus group session at [TIME] today to discuss challenges around finding a location that is safe to prepare and inject drugs in. We’ll meet for about one-hour to discuss what people are seeing in the neighborhood in terms of where people can inject, what kinds of challenges people experience if they have to inject in a public place, and thoughts about how we as a community can address public injection. Since you would be sharing your expertise and experience with what you know about this topic, we’ll be offering a $10 gift card to [NAME] and refreshments during the group for your time. You may participate as little or as much as you like and can ask to leave the group if you’re uncomfortable with the subject matter or anyone else in the group.

If you are interested in participating, please see me in the Drop-In Center between the hours of [TIME] to sign up for the session.”

Individual Screening Script for Eligibility & Participation

Note: Individuals will be screened for eligibility in a separated intake area to ensure confidentiality of responses.

“Thank you for expressing interest in the session! There are a few questions I need to ask you to determine whether you are eligible to participate in the focus group.

Are you over the age of 18 years old?
Do you feel comfortable participating in a discussion that is in English?
Have you injected any drugs in the past three months?
Are you willing to stay for one hour for a short survey and discussion?”

If the participant answers YES to all four (4) questions…

“From what you have shared with me you are eligible to participate. Spots for the group are limited so it is important you show up at [TIME] for the session. Before we start the survey and focus group session, I will share more about the purpose of the research and what it means for you. At that time, you will still have an opportunity to decide if you would like to participate.”

If participant answers NO to any of the four (4) questions…

“From what you have shared with me, you are not eligible to participate in this particular research study. However, there are a number of research studies you may be eligible for that are posted in the drop-in center if you are looking for another opportunity. Thank you for taking the time to express your interest in the research!”
Appendix K – Focus Group Consent Form

Consent Form to Volunteer in a Research Study

TITLE OF RESEARCH STUDY

Title: An Investigation of Public Injection Drug Use in New York City

PRINCIPAL INVESTIGATOR NAME AND CONTACT INFORMATION

Name: Nancy Sohler, Associate Medical Professor
Address: City College of New York, Harris Hall 405B, 120 Convent Avenue, New York NY 10031
Telephone Number: 212-650-7786
E-mail: nsohler@med.cuny.edu

WHAT IS A RESEARCH STUDY?

A research study is when scientists try to answer a question about something that we don’t know enough about. Participating may or may not help you or other people.

People volunteer to be in a research study. The decision about whether or not to take part is totally up to you. You can also agree to take part now and change your mind later. Whatever you decide is okay. Your decision will not affect your relationship with the syringe exchange program where the research is taking place.

I will explain this research study to you. Feel free to ask as many questions as you want to before you decide you want to participate. Any new information learned during the study that might make you change your mind about participating, will be given to you right away.

WHY ARE YOU BEING ASKED TO TAKE PART IN THIS RESEARCH?

You are being asked to take part in a research study about drug user health and location of injection drug use because you are a participant of a syringe exchange program in NYC. If you volunteer to take part in this study, you will be one of about 35 individuals to do so.

WHAT IS THE PURPOSE OF THE RESEARCH STUDY?

The purpose of the study is to learn about drug use practices, location of injection drug use and risks associated with injecting drugs in different places. We are also interested in hearing your feedback on supervised injection facilities, which is a type of program in several countries.
outside of the United States. Lastly, we are interested in learning about individual health and housing status to identify city-wide needs and how it may relate to where individuals are injecting drugs.

You may qualify to take part in this research study because you are a participant of one of a harm reduction program.

Funds for doing this research are provided by the City University of New York (CUNY) Doctoral Student Research Grant.

**WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?**

The research procedures will be conducted at an office-based site where one of the above programs provides syringe exchange services. You will complete an anonymous survey, which should take approximately 10 minutes. After everyone has completed the survey to the best of their ability, we will start the focus group session, which should last no longer than one hour (60 minutes).

**DESCRIPTION OF WHAT’S INVOLVED**

If you agree to participate in this research study, the following information describes what may be involved. Today, if you consent and are eligible, I will ask you a series of questions related to your drug use, your health, experience with law enforcement, history of overdose, and where you are injecting drugs in the survey. After the survey is completed, I will start an audio recording device that will record the focus group session. In the focus group, we will discuss what makes a space safe and unsafe for injection drug use, which may include you choosing to share your experience of injecting drugs in different spaces. The survey will take about 10 minutes, and the focus group will take about 50 minutes. After the focus group session, I will provide you with a $10.00 gift card in appreciation for your time.

**WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS OF BEING IN THIS STUDY?**

There may be minimal risks involved in participating in this study. There always exists the potential for loss of private information; however, there are procedures in place to minimize this risk. Your name will not be connected to any of the things you tell me.

I will also be asking you questions that may bring up discomfort or difficult emotions, such as questions about witnessing or experiencing a drug overdose. All questions are optional, and you do not have to answer any questions you do not choose to answer.

**ARE THERE ANY BENEFITS TO YOU BEING IN THIS STUDY?**
You are not expected to get any direct benefit from participating in this research study. However, the information you tell me will help me share the experiences of injecting in different places with public health professionals and policy makers.

**COSTS OR PAYMENTS THAT MAY RESULT FROM PARTICIPATION:**

If you agree to take part in this research study, we will pay you for your time and effort. After the survey, you will receive a $10.00 gift card for your time.

**VOLUNTARY PARTICIPATION AND ENDING PARTICIPATION**

Participation in this study is voluntary. It is up to you to decide whether or not you participate. You will not lose any benefits or rights you would normally have if you choose not to volunteer. If you decide not to participate your relationship with the syringe exchange program will not be affected in any way.

You can stop your participation at any time and not lose any rights or benefits to which you are entitled.

**OTHER POSSIBLE OPTIONS TO CONSIDER**

If you do not want to be in the study, you may choose not to participate

**WILL INFORMATION ABOUT ME BE CONFIDENTIAL?**

We will keep all research records that identify you confidential, to the extent allowed by law.

Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information gathered. You will not be identified by name in these written materials. We may publish the results of this study. However, we will keep your name and other identifying information private.

We will make every effort to prevent anyone who is not on the research team from knowing that you gave me information, or what that information is. If someone says your name or refers to you by name during the focus group, it will not be included in the written transcription of the session.

**CONTACT PERSON(S)**
Before you decide whether to take part in this study, please ask questions. If you have questions about the study later on, you can contact the researcher, Taeko Frost at (212) 923-7600 ext 123. If you have any questions about your rights as a volunteer in this research, contact the CUNY Institutional Review Board Research Integrity Officer at (212) 650-8234. An IRB is a group that oversees the rights and welfare of people who are in research studies. I will give you a copy of this consent form to take with you.

For Documentation of Capable Adult Consent:

I have read this consent form and have had it read to me. I have had the opportunity to ask questions and my questions have been answered. I have been given a copy of this form. I consent to participate in this study. A signed and dated copy will be given to you.

__________________________________________________________________________
Initials of Participant Date and Time
__________________________________________________________________________

Person Explaining Study and Obtaining Consent:

__________________________________________________________________________
Signature of person obtaining consent Date and Time
__________________________________________________________________________

Printed name of person obtaining consent

If the participant cannot read, a witness is required to observe the consent process and document below:

My signature below documents that the information in the consent document and any other written information was accurately explained to, and apparently understood by, the participant and that consent was freely given by the participant.

__________________________________________________________________________
Signature of witness to consent process

Date and Time

Printed name of witness to consent process
Participant Survey
PLEASE DO NOT WRITE YOUR NAME ANYWHERE ON THIS SURVEY

DEMOGRAPHICS

1. What is your age? _________
2. How do you consider yourself: male, female, or transgender?
   01 Male    02 Female
   03 Trans, Male to Female   04 Trans, Female to Male
3. What is your race or ethnicity? Please circle one
   01 White
   02 Black or African American
   03 Hispanic / Latino
   04 Asian
   05 Other
   (Specify: ___________________________)

Appendix L – Focus Group Survey Instrument
HOUSING

4. In the past 3 months, where have you been staying? Where have you been sleeping most often?

Circle ONE code that best describes where you slept the most
Public place: street, park, subway, bus station, ATM lobby, or building stairwell, roof, or basement
02  Shelter for homeless people
03  Jail or prison
04  SRO (single room occupancy facility) or a welfare hotel or motel
05  Drug treatment or a program
06  Three-quarter housing
07  Non-drug treatment setting: supportive housing or transitional housing
08  Rooming with others: in someone else's house, apartment, or room
09  Your own place, apartment, or a house that is your home.
10  Hospital, nursing home, or hospice
11  Someplace else (Specify: __________________________)  

5. Have you been arrested or incarcerated in the past year?
00 No  01 Yes

5A. If yes, were any of the arrests cited as public drug use?
00 No  01 Yes  02 Unsure

If you would like to write more about this, please do so below:
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

GENERAL DRUG USE
7. In the past 30 days, did you use any of the below?

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<tr>
<th>Drug</th>
<th>Yes/No</th>
<th>How Often Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Methadone</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>B Alcohol</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>C Marijuana</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>D Cocaine</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>E Crack</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>F Heroin</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>G Methamphetamine: ice, tina, crack, crystal</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>H Other opiates, such as: Circle drugs used: Oxycontin, Vicodin, Percocet, Morphine, etc</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>I Downers: Benzos: Valium, Ativan, Xanax</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
</tbody>
</table>

8. How often did you use [drug]?

<table>
<thead>
<tr>
<th>Drug</th>
<th>Yes/No</th>
<th>How Often Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Methadone</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>B Alcohol</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>C Marijuana</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>D Cocaine</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>E Crack</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
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<td>00 No 01 Yes</td>
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</tr>
<tr>
<td>H Other opiates, such as: Circle drugs used: Oxycontin, Vicodin, Percocet, Morphine, etc</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
<tr>
<td>I Downers: Benzos: Valium, Ativan, Xanax</td>
<td>00 No 01 Yes</td>
<td>1 = Every day</td>
</tr>
</tbody>
</table>

LOCATION OF INJECTION DRUG USE

9. Please think about places that you have been when you injected in the past 3 months.

<table>
<thead>
<tr>
<th>Place</th>
<th>No</th>
<th>Yes</th>
<th>DK</th>
<th>NR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street or park</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>A stairwell</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Abandoned building</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Public bathroom, like in a restaurant or train station</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Bus, Subway or Train</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Car or other vehicle</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Bathroom of a Syringe Exchange Program</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Shooting gallery</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Home of a friend, family member or partner’s</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
<tr>
<td>Your own home?</td>
<td>00</td>
<td>01</td>
<td>88</td>
<td>99</td>
</tr>
</tbody>
</table>
9A. Of all the places you injected in the past 3 months, which location did you inject the most?

_______ (Write in item letter, e.g. street = A)

If you would like to write more about this, please do so below:

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

10. In the past 3 months, have you…
10A…. injected with a syringe that someone else had already used?

00 No 01 Yes

10B… use a cooker that someone else had already used?

00 No 01 Yes

10C. … did you use a cotton that someone else had already used?

00 No 01 Yes

OVERDOSE

11. In your life, have you ever used drugs so strong they caused you to overdose?

00 No 01 Yes

If Yes to 11, 11A. Have you overdosed within the past year?

00 No 01 Yes

12. In the past year, have you witnessed someone else having an overdose?

00 No 01 Yes

HIV AND HEPATITIS C

13. Have you ever been tested for Hepatitis C?

00 No 01 Yes
If Yes to 13, 13A. What was the result of your most recent Hepatitis C test?
00 Negative (non-reactive)
01 Positive (reactive)
02 Undetermined

14. Have you ever been tested for HIV?
00 No 01 Yes

If Yes to 13, 13A. What was the result of your most recent HIV test?
00 Negative (non-reactive)
01 Positive (reactive)
02 Undetermined

This is the end of the survey, thank you so for your time and your help.
References


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