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Drug Use on the Coast: Examining the Opioid Epidemic in Maine Lobster Fishing Communities

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*Drug Use on the Coast: Examining the Opioid Epidemic in Maine Lobster Fishing
Communities*

An Honors Thesis

Presented to

The Faculty of the Department of Sociology

Bates College

In partial fulfillment of the requirements for the

Degree of Bachelor of Arts

By

Anna Franceschetti

Lewiston, Maine

March 28, 2018

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Abstract

Since the beginning of the twenty-first century the rate of opioid overdoses in the United States has increased dramatically (CDC 2017a) and daily is responsible for over 100 deaths (CDC 2017e). The opioid epidemic is pervasive and affects people of all backgrounds, but rural America has been hit particularly hard with rural drug overdose death rates exceeding urban rates (CDC 2017a). Maine, the state with the highest percentage of people living in rural areas in the country, (Wickenheiser 2012) saw 354 deaths due to opioid overdoses alone in 2017 (Russell 2018). Situated within this context a newspaper series found that the opioid epidemic is especially prevalent in Maine's lobster fishing communities (Overton 2017). While this observation is consistent with nationwide trends of rural drug use and literature on *Deaths of Despair*, there is little formal knowledge about why the lobstering community is particularly affected by opioid use (Case and Deaton 2015). To provide a more systematic understanding of this phenomenon, this study aims to: 1) examine the drivers behind opioid use in the lobster fishing industry and 2) identify opioid prevention and recovery techniques that are most effective for the lobster fishing community. These questions were explored using a qualitative study design. Semi-formal interviews were conducted in three Maine lobster fishing communities with lobster fishers and community members (N=20). Results found that the drivers for opioid use were largely consistent and industry specific and included: ability to purchase drugs, boredom, work injury and work environment. There was inconsistency in the prevention and treatment options available in the communities investigated, though there was uniformity among barriers mentioned.

Introduction

On the morning of November 1st 2014, off the coast of Downeast Maine, a lobster boat set out into the stormy North Atlantic Ocean (Betts 2018). Aboard the vessel a captain and his two sternmen worked to haul lobster traps. As weather worsened 40 knot winds and nearly 15 foot waves left the “No Limits” lobster ship capsized at sea, killing two crew members and leaving the boat’s captain struggling to survive. This tragic tale is not one of fishing lore or a lost-at-sea narrative but instead is a story of the opioid epidemic. The boat’s captain, Christopher Hutchinson, was under the influence of Oxycontin and alcohol when he departed from the shores of Cushing, Maine (Betts 2018).

* * *

Over the past decade opioid use and abuse has been on the rise throughout the United States with a dramatic increase in deaths due to opioid overdose occurring each year. Over 100 deaths a day are attributed to opioids in the US (CDC 2017e). While the opioid epidemic has effected people nationwide, the state of Maine had the 10th highest drug overdose death rate in the country of 28.7 deaths per 100,000 people in 2016 (CDC/National 2018). Further in 2016 opioid related drug overdoses were responsible for 313 deaths in the state (Overton 2017) and 354 deaths in 2017 (Russell 2018).

In response to these alarming statistics and devastation to the Maine population a ten-part series was published in the local Maine newspaper *The Portland Press Herald* addressing the opioid epidemic. These articles recounted the stories of the people of Maine’s struggles with addiction, loss of family members due to overdose and cries for help. They further highlighted that though opioid use and abuse does not discriminate it has affected some communities more than others. Specifically, the articles suggested that the epidemic has seriously impacted Maine’s

lobster fishing communities. The Hutchinson case of 2014, though uncommon in outcome, appeared not to be a stand-alone case of drug use in the lobstering industry but in fact representative of a larger phenomenon at work. These assertions made by the press, powerfully caught the attention of many who call the state of Maine home- myself as an upcoming thesis writer included. I was curious to take a closer look and examine the ways in which drug use impacts the lobster fishery.

Though newspaper articles as well as other local documentaries have shed light on this issue, there has yet to be a systematic study investigating opioid addiction in the lobstering communities of Maine. This thesis aims to address this gap and better understand the reasons the lobstering community in particular is struggling with opioid use, so the question becomes: what are the drivers for drug use in the lobster fishing community? Additionally, this study will seek to understand ways to help those who are battling substance abuse, by asking what specific treatment and prevention mechanisms for opioid use are best fit for lobster fishers. It is important to note that because data on opioid deaths are not categorized by occupation in Maine, it is difficult to determine if drug use is more prevalent in the lobster industry than other communities. Therefore, this project does not seek to determine *how much* opioid use and abuse there is in the lobster industry, but rather *why* lobster fishers are using. It is critical to investigate this drug community with the context of the larger opioid epidemic in mind to gain a better understanding of the level of generalizability for factors for use.

This thesis begins by first exploring existing literature about opioids, drug abuse, and treatment as well as drivers behind use in other rural, industry based, communities. Additionally, literature on lobster fishing culture will be examined and put in conversation with the known predictors of drug use. Next, the qualitative approach to this investigation will be explained in

the methodology chapter, followed by two chapter that explain the results. Results Part 1 will be dedicated to data about drivers for drug use while Results Part 2 will include data about solutions. Finally, analysis of the findings and concluding remarks will be presented in the final chapter: Discussion.

Literature Review

Opioid Overview

Opioids are a class of drug that function to decrease pain. Opioids fall into four primary categories recognized by the Center for Disease Control (CDC 2017c). The first category is *natural and semi-synthetic opioid analgesics*. This class of drug, colloquially known as prescription painkillers, includes drugs such as morphine, codeine, oxycodone and hydrocodone. The second category of drugs is known as *synthetic opioid analgesics* and includes the drugs fentanyl and tramadol. The third class of drug, *methadone*, is also a synthetic opioid but is classified separately by the CDC. The final category of drug is heroin, which is a derivative of morphine. Natural, semi-synthetic and synthetic opioid analgesics are often prescribed by doctors in order to relieve pain after surgeries or manage pain after serious illness, while heroin is an illicit substance that is sold illegally (CDC 2017c).

In addition to relieving pain opioids also provide a feeling of euphoria by chemically interacting with brain receptors (NIDA N.d.). Due to these highly pleasurable feelings, opioids are extremely addictive and therefore are easy to abuse and become dependent upon (NIDA N.d.). Though opioid use and abuse have previously been considered an addiction, it is now recognized by the DSM-IV as Opioid Use Disorder.¹ Symptoms of opioid use disorder are: “strong desire for opioids; inability to control or reduce use; continued use despite interference with major obligations or social functioning; use of larger amounts over time; development of tolerance; spending a great deal of time to obtain and use opioids; and withdrawal symptoms that occur after stopping or reducing use” (SAMHSA 2015b).

¹ Throughout this thesis I will refer to Opioid Use Disorder variably as use, abuse and misuse. This choice is not to take away from the fact Opioid Use Disorder is a legitimate disease, but rather because literature and participants often used these terms.

Opioids in the United States

Over the past decade and a half opioid use has become widespread in the United States. Deaths due to drug overdose have been quickly on the rise as seen in the jump from 17,415 deaths in 2000 to 52,404 deaths in 2015 (Dowell 2017). Deaths due to opioid specific overdoses have more than tripled from 2000 to 2015, increasing from 8,407 deaths to 33,091 deaths (Dowell 2017). These drastically increasing death rates and far reaching effects of deaths due to opioid use meet the criteria of an epidemic. As defined by the CDC, “Epidemic refers to an increase, often sudden, in the number of cases of a disease above what is normally expected in that population in that area” (CDC 2012a). This alarming increase in mortality due to drug overdoses has had a significant impact on the overall life expectancy of Americans, lowering the it by 0.28 years (Dowell 2017).

Prescription Opioids

In the 1980s researchers published studies suggesting that prescription opioids have minimal addictive properties if prescribed by a physician and taken properly by the patient. As a result, and with the encouragement of powerful pharmaceutical industries, physicians learned a culture of pain management in which opioid prescription was salient (Beauchamp et al. 2014). Though pain was a factor in the increase of opioid prescriptions, it is difficult to assess the legitimacy of the prescriptions. As Case and Deaton, the authors of a body of work called *Deaths of Despair* write, “The epidemic of pain which the opioids were designed to treat is real enough, although the data here cannot establish whether the increase in opioid use or the increase in pain came first” (Case and Deaton 2015: 15081).

Opioids are commonly prescribed to patients after operations as a way to reduce pain and according to the CDC, “an estimated 20% of patients presenting to physician offices with non-cancer pain symptoms or pain-related diagnoses (including acute and chronic pain), receive an

opioid prescription” (Dowell 2016). Though opioids successfully reduce pain in many patients, they are variable in their effectiveness (Golembiewski and Rakic 2010). According to Golembiewski and Rakic, there is no direct relationship between opioid dosage and level of pain reduction, as they write, “10 mg- intramuscular injection of morphine provides at least 50% pain relief in only one of every three adult post-operative patients” (Golembiewski and Rakic 2010: 258). Opioids are largely effective in treating pain after surgery, but some patients have adverse reactions in which their pain increases rather than decreases (Golembiewski and Rakic 2010). Prescription opioids also vary in how long they are able to treat pain. For example, opioids have been found to reduce back pain immediately but their effectiveness for more than four months has not been confirmed (Martell et al. 2007).

Although it is difficult to assess, over the years studies indicate that opioids do in fact present a risk of iatrogenic addiction (addiction caused by medical treatment) (Beauchamp et al. 2014). According to the CDC, “having a history of a prescription for an opioid pain medication increases the risk for overdose and opioid use disorder, highlighting the value of guidance on safer prescribing practices for clinicians” (Dowell 2016). Additionally, in a review of five studies by Martell et al. it was found that up to a quarter of those who took opioids to manage back pain took the medication not as prescribed (Martell et al. 2007). The addictiveness of prescription opioid drugs has been recognized by many in the world of academia but it has also been noticed on the front lines of managing pain. First responders in the state of Massachusetts noticed the risk of addiction to opioids and in response advocated for non-narcotic pain medications as alternatives to the existing pain management strategies on ambulances (ice and the highly addictive opioid fentanyl). They were successful in their advocacy and in September 2017

approval for ambulances to carry acetaminophen, Motrin and Toradol was granted, in hopes of preventing unintentional addiction (Brown 2017).

The use of prescription opioids has plateaued since 2011 (NDEWS 2015: 4), however, the use of other opioids, such as heroin and fentanyl has dramatically increased since 2012 (NDEWS 2016: 12). This shift can largely be attributed to stricter regulations of prescription pills, making heroin the cheapest opioid option (Overton 2017; SAMHSA 2015b).

Heroin

Heroin is an illegal opioid drug that is a derivative of morphine. It comes in powder form and is either injected or snorted to get high (NIDA 2018b). Heroin elicits feelings of euphoria when taken and is an extremely addictive drug and a tolerance to the drug may be quickly built. (NIDA 2018b). Recently, heroin has been cut with other more potent opioids such as the synthetic drug fentanyl. Users are often unaware of the addition of fentanyl which is 50-100 times more powerful than heroin (CDC 2017a). The impurity of the heroin often results in drug overdoses (SAMHSA 2015b). In recent years synthetic opioids have been responsible for the increase in opioid overdose deaths (CDC 2017d).

Predictors for Opioid Use

There are a variety of factors that predict a person's entry into opioid use and they can be categorized into four primary themes: childhood predictors; social predictors; demographic and geographical predictors; and mental and physical predictors. These factors act independently as well as in unison to predict drug use. These predictors are important to understand because they can help to inform prevention and treatment.

Childhood Predictors

The experiences that a person has as a child have a large impact on their likelihood of using drugs later in life. Adverse childhood experiences (ACEs) are harmful events that happen in ones' formative years of life (Center 2015). These experiences such as abuse, neglect, family dysfunction (i.e. family member substance abuse, mental health issues, incarceration, and/or divorce) have been shown to have a “graded” influence on drug abuse. This means that the more negative events that occur, the more likely one is to use drugs (Dube et al 2003; see also: Center 2015; HHS 2016). Experiencing repeated traumatic situations has been shown to affect a person's neurodevelopment and as a result also impacts one's social, emotional and cognitive processes, and thus puts a person at risk for drug use (Center 2015; see also: HHS 2016).

Children who have experienced any form of abuse, parental or otherwise, have been shown to use drugs earlier in life and are more likely to use illicit drugs throughout their life (Darke et al. 2016:166, Center 2015). Early drug use predicts the progression to the use of dangerous drugs later in life (Kaplan et al. 1984). Researchers have found that there is typically a long chain of substance use history that precedes one's use of opioids (Darke et al. 2015: 168). Heroin for example, is generally not the first drug that people use (Darke et al. 2015: 168) but instead, one may start by using marijuana (O'Donnell and Clayton 1982). Here it is important to note the commonly discussed concept of “gateway drugs” in which use of licit drugs is thought to be predictive of illicit drug use. This relationship is not a causal one but rather correlational. As one study explains “the observed sequences could simply reflect the association of each class of drugs with different ages of initiation and or individual attributes rather than the specific effect of the use of one class of drug on the use of another... [U]se of a drug at a particular stage does not invariably lead to the use of other drugs higher up in the sequence.” (Yamaguchi and Kandel

1984, p 671). Nonetheless, early childhood use of drugs of any sort has been shown to impact opioid use later in life.

The social environment a person experiences as a child extends beyond the family and also involves one's schooling. The Social Ecology Model shows the joint impact of family and school on a person's belief in themselves and their peer group selection which in turn influences substance abuse (Kumpfer and Turner 1991). Kumpfer and Turner explain, "Students with poor family or school climate do not appear to develop a positive sense of self or to bond to their school" (Kumpfer and Turner 1991: 455). This in turn, results in low self-esteem and belief in oneself, leading to associating with a peer group that does not support healthy or altruistic behavior. This trend is further evidenced in other work that discusses the distancing of social ties with modes of guidance in a young adult's life and "the disposition to seek deviant patterns through which an individual can achieve self-accepting attitudes" (Kaplan et al. 1984:271) can lead to drug use. Agnew's General strain theory further demonstrates the impact of school and family in one's formative years. This model explains deviant behavior as a product of "strain" (Agnew 1992) and supports other findings that adolescents that have poor relationships with adults, peers and school are more likely to demonstrate deviant behavior (Paternoster and Mazerolle 1994).

The weakening of social bonds with school and family provides room for students to associate with peers that also participate in deviant behavior (Paternoster and Mazerolle 1994). The activities that one's social group partakes in influence drug use (Kaplan et al. 1984) and studies have found that, "the primary direct predictor of illegal alcohol and drug use in high school students in this sample is association with antisocial peers and involvement in antisocial acts" (Kumpfer and Turner 1991: 455). However, when considering peer influence as a driver for

drug use Bauman and Ennett note that it may not be as significant of a factor as others suggest, stating that, “selection and projection may increase the association between friend and adolescent behavior” (Bauman and Ennett 1996).

While youth association with deviant peers is often a response to poor social relationships with school and family, drug use behavior can also be learned. These forces are explained by Akers’ Social Learning Theory, that describes how drug use is learned from the people someone is surrounded by. The model suggests that individuals learn behaviors from those around them in four primary ways: (1) *imitation*, defined as mimicking the way people act; (2) *differential reinforcement* which describes the positive and negative rewards and punishments for behaviors; (3) *definitions* are the cultural expectations; (4) *differential associations* are the influences that come from the people you surround yourself with (Akers et al. 1979: 683). To varying degrees, all four of these factors have been shown to have an impact on drug use. *Differential association* is the most influential predictor meaning that those found in environments where they are surrounded by peers, friends and family who use drugs are likely to use. *Imitation* was noted as the weakest factor (Akers et al 1979: 651).

Social Predictors

While many childhood predictors of opioid use lead to later drug use, there are other social predictors that extend beyond childhood. Zinberg’s (1984) theoretical model of “drug” “set” and “setting” is used to examine prescription drug use by recognizing the interconnectedness the individual and the environment have on one’s likelihood to initiate drug use. The model describes “drug” as the biological properties of the prescription and how it influences a person, “set” as the users personality and psychology, and the “setting” as the makeup of the environment the individual is in (Mui et al. 2014: 238).

Consistent with Zinberg's model, others have found that "setting" influences drug use. Shaw and McKay's Social Disorganization theory suggests that neighborhood disorganization is predictive of delinquent behavior. They write, "low economic status, high ethnic heterogeneity, residential mobility and family disruption lead to community social disorganization which, in turn, increases crime and delinquency rates" (Sampson and Groves 1989). Others have also shown that there is a positive relationship between social disorganization and alcohol and drug use (Winstanley et al. 2008). Further, people are more likely to use drugs and die of drug overdoses in communities with high poverty rates (Williams 2007).

Social capital is another factor of the social environment that influences drug use that is defined by Robert Putman as the, "features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam 1995:67). Social capital can be categorized into two primary types: bridging and bonding. Bonding social capital refers to relationships between homogenous groups of people that are exclusive, while bridging social capital discusses relationships between heterogeneous people and therefore are inclusive (Putnam 2000).

Social capital is composed of five components, "(1) the density of community and personal networks; (2) civic engagement and participation; (3) a sense of belonging in the community; (4) reciprocity and cooperation with fellow citizens; and (5) trust in the community" (De Silva et al. 2005 as qtd. in Zoorob and Salemi 2016). More Americans than ever before have a decreased trust in society, fewer people are involved in formal religious activities, unions, volunteer groups and overall have smaller social networks (Putnam 1995). Putman writes, "In America, at least, there is reason to suspect that this democratic disarray may be linked to a broad and continuing erosion of civic engagement that began a quarter-century ago" (Putman

1995:77) Civic engagement matters because communities that promote strong citizen involvement have been shown to have more positive results in many facets of society, including drug abuse, unemployment rates and education (Putnam 1995).

The implications of declining social capital are wide reaching but have a documented impact on health. Across both bonding and bridging levels of social capital, communities with lower social capital had higher rates of poor health outcomes (Kim et al. 2006). Low levels of social capital were associated with high levels of drug and alcohol use (Winstanley et al. 2008) and social capital has been found to act as a protective factor for drug overdose (Zoorob and Salemi 2016). With a few exceptions, nationwide, counties that experienced high overdose deaths had low social capital, suggesting that there is an inverse relationship between social capital and drug overdose deaths (Zoorob and Salemi 2016).

Despite the protective nature of social capital on drug use at the community level, large social networks (i.e. high social capital) have also been shown to facilitate drug use (Runyon 2017; see also: Keyes 2014). Further, others noted that in rural Appalachia higher rates of social capital were found among those who used prescription opioids frequently, suggesting, “that in regions with marked economic disparities such as rural Appalachia, OxyContin may serve as a form of currency that is associated with increased social capital among drug users” (Jonas et al. 2012).

Consistent with the idea that people are using drugs because they are more isolated than ever before, Durkheim can help to explain heroin use with the theories of Collective Effervescence and Anomie (Dyer 2004:100). The idea of Collective Effervescence explains how in a group setting, often a religious one, an individual can be elevated to a higher sense of self

due to the communal energy created (Dyer 2004:101). Durkheim writes in the *Elementary Forms of Religious Life* “by what other name (than religion) can one call the state in which men find themselves when, as a result of Collective Effervescence, they believe they have been swept up into a world entirely different from the one they have before their eyes?” (Durkheim 1995:228 as qtd. in Dyer 2004). Drug use, while not a religious act, when operating in a social setting can provide a sense of heightened community. Durkheim’s theory of Anomie describes the postindustrial lack of collective consciousness that he coins “organic solidarity” in *The Division of Labor and Society* (Dyer 2004). This lack of collective consciousness has resulted in a society in which people are isolated and therefore use drugs to escape feelings of loneliness (Dyer 2004). Combined, Durkheim’s theories help to explain why heroin use is so attractive. In her work *Durkheim, Mead and Heroin Addiction*, Dyer describes how Durkheim’s theories inform drug use, “I believe that Durkheim would see the social problem of heroin abuse as resulting from the anomic state of society combined with the hunger of the people living in the state for those powerful experiences of collective effervescence” (Dyer 2004:102). The communal and physiological properties of opioids offer a feeling of belonging as well as an incredible sense of euphoria and pain relief, together contracting feelings of isolation and loneliness.

Demographic and Geographical Predictors

While the opioid epidemic has impacted communities across the nation, specific demographic and geographic patterns have been observed among those who are particularly affected by opioid use. In this section literature specifically focusing on white working-class men and rural populations was examined as it pertains to the demographic and geographic makeup of Maine lobster fishers in this study.

Case and Deaton (2015) have observed a trend that they label *Deaths of Despair*, or the steadily increasing mortality rate of the white working class, as a result of drug overdoses, chronic liver disease (usually from alcohol abuse), and suicide (Case and Deaton 2015). From 1999-2015 the mortality rate of non-Hispanic white, middle-aged Americans has increased steadily by about 0.5% a year. This is a drastic reversal from the previously decreasing mortality rate among this demographic. Morbidity, or “disease, injury, and disability” (CDC 2012b), among non-Hispanic whites has also seen an increase over the past 15 years, as indicated by increases in pain and psychological distress among this population (Case and Deaton 2015). The increase in mortality among non-Hispanic whites is notable as other racial groups, such as non-Hispanic blacks and Hispanics, have seen a decrease in their mortality rates. In fact, mortality rates of non-Hispanic whites have flip-flopped from being 30 percent lower compared with mortality rates among non-Hispanic blacks prior to 1999 to 30 percent higher in 2015 (Case and Deaton 2017). No other wealthy nation has experienced this same sort of marked increase in mortality (Case and Deaton 2017).

Anne Case, one of the primary researchers on the matter, explains deaths of despair in an interview on National Public Radio: “So we think of this as people, either quickly with a gun or slowly with drugs and alcohol, killing themselves” (Boddy 2017). Though an increase in mortality has been seen in all middle-aged whites, it has disproportionately affected those whose highest degree of education is high school. Of this demographic, more males are dying than females although females exhibit parallel upward trends in mortality (Boddy 2017).

Case and Deaton have attributed this pain epidemic to what they call “cumulative disadvantage” or the lack of economic and social supports for middle-aged white working class Americans through the life course (Case and Deaton 2017). Today the job market is more

uncertain, especially for those without college degrees (Case and Deaton 2017). Case and Deaton explain this phenomenon,

This process, which began for those leaving high school and entering the labor force after the early 1970's- the peak of the working class wages, and the beginning of the end of the "blue-collar aristocracy" --worsened over time, and caused, or at least was accompanied by other changes in society that made life more difficult for less educated people, not only in their employment opportunities but also in their marriages and in the lives of and prospects for their children (Case and Deaton 2017: 429).

Deaton further continues that this lack of opportunity has caused people to feel that "[they] have lost this sense of status and belonging" (Boddy 2017).

Literature on rural drug use is consistent with Case and Deaton's findings that suggest that the mortality rate of lower class middle-aged white men is on the rise in part due to opioid use. For example, a paper titled *Prescription Drug Overdoses: A Review* by Paulozzi found that, "Host factors [for nonmedical prescription opioid use] include male sex, middle age, non-Hispanic white race, low-income, and mental health problems. [And] Environmental factors include rural residence and high community prescribing rates" (Paulozzi 2012:283).

Although opioid use and abuse has been on the rise nationwide, there has been a marked increase in rural areas. For example, in 2015, the drug overdose death rate reached 17 per 100,000 people in rural America, exceeding the urban rate by nearly one death per 100,000 (CDC 2017a). It is important to define what counts as a rural area versus an urban area when considering these statistics. Urban areas are characterized in one of two ways, either as urban clusters ranging from 2,500-50,000 people or urbanized areas in which more than 50,000 people reside. Rural areas, by default, are those that fall outside the category of urban (US Census 2015). It is of note that Maine has the most people residing outside of urban areas than any other state in the country (Wickenheiser 2012).

Keyes et al. identify four major factors that explain why rural America has seen such a high concentration of nonmedical prescription opioid users. First, in rural areas, with some exceptions, there is a higher prescribing rate of opioids and therefore an increased access to prescription drugs. Keyes et al. attribute this trend to the aging populations in rural areas, and the high prevalence of injury and chronic pain compared to urban areas (Keyes et al. 2014). The second factor contributing to high rates of rural drug use noted by Keyes et al. is the frequent out-migration by young people in rural areas. This pattern of out-migration, is often triggered by a lack of economic opportunity and further perpetuates economic decline as those without the social mobility to leave are more likely to have risk factors for drug use. Ultimately this results in high unemployment rates, leaving people more susceptible to drug use (Keyes et al. 2014).

The third factor that Keyes et al. propose is that rural areas have tighter social and kinship networks than urban communities allowing for easier access to drugs. This is seen with the inverse relationship with social capital and drug use, but is heightened in rural communities because of increased neighborly trust and a higher likelihood of interacting with neighbors in rural communities (Keyes et al. 2014). This notion is also supported by others such as Luke Runyon, a reporter for the National Public Radio of Illinois, who writes, “In some ways rural regions are built to spread illicit drugs” (Runyon 2017). Runyon interviews sociologist Kirk Dombroski who states, ““One of the things that is counterintuitive to most of what we think of as a small town is that rural people have much larger social networks than urban people”” (Dombroski 2017 as qtd. in Runyon 2017). As a result of these large social networks, people in rural communities have more people from which to obtain drugs (Runyon 2017). The final factor presented by Keyes et al. that contributes to drug use in rural areas is increased economic

hardship in rural areas due to the scarcity of viable employment options which in turn leads to drug use (Keyes et al. 2014).

Mental and Physical Predictors

Both mental health and physical health factors have been shown to influence the use of opioids. Although literature on mental and physical predictors were examined in isolation, for the purposes of this thesis, they were categorized together here as they are both predictors of opioid use that stem from ailments of the body.

It is very common that those with substance abuse disorder also have a co-occurring mental illness (HHS 2016). Having a serious mental illness increases one's likelihood of substance abuse four-fold (Diomedea 2015). While there is not a definite understanding of this relationship, three primary explanations exist: (1) substance use provides relief for mental illness; (2) substance use evokes mental illness; and (3) drug use and mental illness have “overlapping” biological and environmental predictors (HHS 2016).

As discussed above, prescription opioids are often taken as a result of physical pain (Dowell 2016; Leukefeld et al. 2007). Opioids are commonly given after surgery to help manage pain (Dowell 2016) and are also given to patients who suffer from chronic pain or injury (Martell et al. 2007). Prescription opioids have been shown to be highly addictive (Beauchamp et al. 2014) and increase one's likelihood of opioid use disorder (Dowell 2016).

In 2015 among private industries, employees with the most days out of work due to illness or injury, “included heavy and tractor-trailer truck drivers; laborers and freight, stock, and material movers; and nursing assistants” (U.S. Bureau 2016a). Common among these occupations, is that they are physical in nature, suggesting that physically intensive jobs are more

prone to illness or injury. Others have supported this finding stating that “... adults in manual labor occupations were more likely to misuse opioids than adults who were not in these professions. This finding suggests that individuals in manual labor occupations are at increased risk for prescription opioid misuse (POM) and should be monitored more closely for chronic pain and opioid use/misuse” (Rigg and Monnat 2015: 488). Further, a study in rural Appalachia demonstrated that people started taking pain medication to treat physical pain (Leukefeld et al. 2007). This trend emerged among a community that had deep roots in manual labor. Leukefeld et al. explain, “rural drug culture was described by our key informants and others as emerging from loggers who worked with limited power equipment and coal miners who worked bent over in three to four foot high coal mines. The families of loggers and in ‘coal camp communities’ accepted the use of prescription drugs to relieve physical pain and to help wives cope with their depression and their ‘depressing’ surroundings” (Leukefeld et al. 2007).

Statistics from the 2008-2012 National Survey on Drug use and Health, show that the highest rates of alcohol use occur among workers in manual labor occupations such as mining and construction (NDFWA 2018). In the Agricultural, Forestry Fishing and Hunting industries (which were combined into one category) 5.7% of this nationwide cohort uses illicit drugs, 9.4% use alcohol heavily and 10.5% have had a substance abuse disorder in the past 12 months (NDFWA 2018).

Treatment

While there are variety of factors that influence the commencement of drug use, there are also a variety of treatment options available. The following section will begin by examining the immediate response to an opioid overdose, then it will discuss the variety of treatment options available, and finally it will examine these treatment options in the state of Maine.

Response to Overdose:

Naloxone, often called by its brand name Narcan or Evizo, is a prescription drug that reverses the effects of opioid overdoses. Naloxone can be injected or given nasally to a patient who has overdosed. The drug binds to opioid receptors and reverses decreased respiration in the overdosed patient (NIDA 2018a). Naloxone does not have addictive properties and is given reactively, only to someone who has overdosed (Davis et al. 2017). While the drug has been effective in saving lives, there are barriers to its use because the general public has limited access to it. One way that legislature has attempted to decrease the overdose mortality rate is by allowing third party community members to get Naloxone prescriptions. With this model, the hope is that these community members will be in a position where they can more quickly respond to an overdose than paramedics might be able to. Maine has permitted lay community members to acquire Naloxone (Davis et al. 2017). Good Samaritan laws are another model to improve outcomes for overdoses. These laws allow community members to call emergency services for those who have overdosed without worrying about negative legal repercussions. Maine does not have Good Samaritan Overdose immunity laws (Davis et al. 2017). Recently there has been some debate that Naloxone may encourage opioid use. A new article published by the economists Jennifer Doleac and Anita Mukherjee suggest there are increased opioid overdose and arrest rates in areas where Naloxone use has been legalized. However there has been significant push back on this assertion, especially by members of the public health community who urge the importance of differentiating causal and correlational relationships. A journalist reporting on this new research writes that, “Naloxone access is considered a pillar of ‘harm reduction,’ or the idea that if people can’t immediately be cured of addiction, we should at least make it less dangerous for them to keep using” (Khazan 2018).

Treatment Options

When it comes to treatment, there is a debate over the best way to help those who are addicted to opioids. The two basic schools of thought are either going cold turkey (no medical treatment), or using medication. Both treatments are used in the state of Maine and have seen success stories (Russell 2016). However, according to the National Institute on Drug Abuse, Medically Assisted Treatment (MAT), involving a combination of both medication and therapy, is the most effective treatment method for opioid addiction. Yet less than half of privately funded treatment centers use this type of treatment (NIDA 2016).

When using medication as a treatment for opioid dependence, there are two primary methodologies: maintenance and detoxification. Maintenance means continued use of the treatment drug, while the detoxification approach uses a drug to wean the patient off of opioids. There are a variety of drugs used to address opioid dependence, some better suited for maintenance methods and some for detoxification (Stotts 2009).

Methadone is a maintenance therapy that works to diminish the symptoms of withdrawal and to prevent an opioid high (Stotts et al. 2009; SAMHSA 2015a). Methadone is an agonist drug, meaning that it binds to opioid receptors, and thus acts as a replacement to the opioid someone is addicted to (Stotts et al. 2009). For years, methadone has been a common treatment although it is also rather addictive and therefore has high potential for misuse. Further, methadone requires a stricter regimen than other treatment drugs, as it must be taken daily as part of an opioid treatment program and this makes accessibility an issue (Stotts 2009; SAMHSA 2015a). It is suggested that patients receive counseling in conjunction with the use of methadone (SAMHSA 2015a).

Buprenorphine, also commonly referred to by its brand names Bunavail, Suboxone, and Zubsolv, is a partial agonist (Stotts 2009) that is used to treat opioid dependence. Buprenorphine has a weaker binding effect than that of a full agonist (SAMHSA 2016) and is often combined with Naloxone to prevent misuse (Stotts 2009). It has been a popular treatment as it can be prescribed to outpatients, making it more convenient than other treatments like methadone that are taken daily. It is recommended that Buprenorphine is used in conjunction with behavioral therapy (SAMHSA 2016).

Lobster Fishing

With the understanding of opioids, the predictors of opioid use disorder and treatment options as a backdrop, this thesis now turns its focus to lobster fishing culture. It is important to first contextualize the inner workings of the lobster fishing industry, so that insights about how this culture interacts with drug use can be further explored. This section will begin broadly, by examining worldwide fishing culture, next it will move to describe lobster fishing culture, resource management strategies and finally the lobster economy.

Worldwide Fishing Culture

Societies around the world are shaped by the fishing industry and exhibit some commonalities from community to community. Though set in vastly different cultural contexts, understanding other fishing communities can help to better illustrate lobster fishers' relationship with their occupation.

For example, in a study that compared job satisfaction among lobster fishermen in Jamaica, Nicaragua and Belize, data suggest that all three groups were relatively happy with their job. Interviewees in these communities suggested that their occupation met their basic and social needs and allowed for self-actualization even though the industry in their community was in

decline. This study supports other literature that suggests fishing is not just a job but also a way of life (Monnereau et al. 2012).

Another study about Scottish fishing communities is useful in examining fishing culture as it pertains to drug use. In a study that examined the lifestyle habits of fishers, researchers found that fishermen smoked cigarettes more than the general Scottish public, however they smoked at a similar level as their non-fishermen, manual labor counterparts. Interestingly, the study found that 82% of the fishermen wanted to quit smoking, suggesting the possibility of distaste for their habit. Further, researchers noted that alcohol consumption was lower among the fishermen in the study than the control group of Scottish males. Lawrie et al. suggest that this could be because some fishing communities vow not to use alcohol while at sea or it could be a result of binge drinking while on shore. Many of the fishermen in the study were not knowledgeable about the amount that is safe to drink, and the article proposes that better prevention and education programs could help address this issue (Lawrie et al. 2014).

Lobster Fishing Culture

Lobster fishers have a distinct identity within the Maine community as well as the larger national context. As Acheson describes in his book *The Lobster Coast*, "...the lobster fishermen embodies many of our most cherished virtues. He is, along with the farmer and rancher, the quintessential American" (Acheson 1988: 2). Lobster fishermen are often thought of as an extremely independent group of people who do not like to talk about their feelings (Overton 2017: 6). A lobsterman quoted in an interview in *The Portland Press Herald* suggests that lobstermen are not out of touch with their emotions, but there is simply not a space in the fishing culture to express them. "It's hard to get fishermen to talk about the kinds of things that make us drink and do drugs," he said. "We have a soul. We look at sunsets and think they're pretty but we

don't talk about them. We don't admit they're pretty, don't admit we think about them.”

(Overton 2017: 6)

Though lobstermen often see themselves as individualistic, self-determined people, they also participate in a complex web of social interactions (Acheson 1988: 48). Acheson labels groups of lobster fishers who fish from the same harbor as “harbor gangs” (Acheson 1988: 48). These gangs act as a support system for each other and have established, yet unwritten, rules that they must abide by. For example, they have specific territories where they set their traps (Acheson 1988: 49).

Harbor gangs also act as a social unit to which members of the community can compare themselves (Acheson 1988:49). Within the lobster fishing community captains, the boat owners, and sternmen, the crew members, (Acheson 1988: 3) work together to haul traps. Within each harbor gang there is a hierarchy based on talent and earnings. Fishermen who bring in large catches with a minimal number of traps are seen as highly skilled and are on top of the hierarchy. These fishermen are referred to as “highliners” while those who bring home meager catches are known as “dubs” (Acheson 1988).

A Note on lobster fisher “men”

Though the lobster industry has been historically male dominated, women also have a role in the industry. In 1985, women held 9% of lobster fishing licenses (Marin and Lipfert 1985:118 as qtd. in Acheson 1988) and in 2014 they held 4% of the licenses (Allen 2014). The numbers do not account for females working on boats as crewmembers. Therefore, throughout this thesis the term lobster fishers will be used rather than lobstermen as to be gender neutral and inclusive.

Resource Management Strategies: Folk Management and Lobster Zones

Prior to the late 1990's, Maine lobster fishers practiced folk management strategies as a way to regulate the lobster resource. Folk management can take a variety of forms but is generally defined as, "any localized behavior originating outside state control that facilitates the sustainable utilization of renewable natural resources" (Dyer and Mcgoodwin 1994:1). Harbor gangs, what Acheson terms the fundamental unit of fishing regulation, (Acheson 1988:48) used folk management strategies to regulate their harbors. These practices included "...the exclusion of new fishers, [and] territorial defense and trap limits" (Palmer 1994:246). A lobster fisher's entry into a harbor gang allows them a plethora of privileges. For example, a lobster fisher who has been accepted in a harbor gang is able to fish in the territory controlled by the group and is given the opportunity to acquire knowledge from other fishers in the community (Acheson 1988: 49). With time, a lobster fisher begins to self-identify as an affiliate of the harbor gang and with this support has the opportunity to have a successful fishing experience.

In 1997 Lobster Zone Councils were introduced to New England so that commercial license holders could vote on issues in their district concerning resource management (Dayton et al. 2014). Many of the folk management practices used prior to 1997 were transformed into the formal regulation structure of Lobster Zone Councils, under the Department of Marine Resources (Department 2016). For example, policies that were previously used by harbor gangs such as edging out others who wanted to join the fishing fleet were translated into official rules such as limited-entry zones in which proper exit ratios must be maintained in order for a new fisher to obtain a license (Department 2016). The purpose of lobster fishing councils and their corresponding zones is to help manage Maine's lobster population (Department 2016).

The Maine coastline was divided into seven Lobster Management Zones, labeled from A-G to facilitate governance (Department 2016). Together the Maine Lobster Management Zones A-G make up Lobster Management Area 1 (See Appendix B for map) recognized by the National Marine Fisheries Service and National Oceanic and Atmospheric Administration (NOAA 2018). The locations chosen to interview people for this thesis fall into three Lobster Management Zones. Lobster Zone A includes Machias and includes other parts of Washington County, Lobster Zone C includes the towns of Stonington and Deer Isle and overlaps with Hancock County, and Lobster Zone E includes Boothbay which is located in Lincoln County (See Appendix B for maps Lobster Zone's A, C and E).

These Management Zones are governed by elected council members who are voted into office by license holders from corresponding lobster management zones (Department 2016). The lobster zone council members who are elected “may conduct its business and decide all issues by consensus except the decision to hold a referendum on lobster fishing effort limitations” (Department 2016: 25). Constituents are able to vote on fishing effort limitation regulations for their district. The three primary categories of regulation include: “1) limits on the number of traps per license and time for compliance; 2) number of traps on a trawl; and 3) time and days for fishing” (Dayton et al. 2014). Regulations in these categories need to pass by a two-thirds majority of all licensed members in the zone and be approved by the commissioner of the Department of Marine Resources before they become statute (Dayton et al. 2014).

As a result of the work put forth to manage the lobster resource through limitations on fishing effort, there have been formal regulations implemented regarding entry into the industry. Dayton et al. write, “Lobster Zones have largely become ‘limited-entry zones,’ whereby one new license is issued based on the number of trap tags retired the previous year (derived from

licenses that are not renewed). These exit ratios have led to a 12% reduction in licenses since 1997” (Dayton et al. 2014:10). Due to the difficulty of entering the industry, there has been a concern about the aging workforce (Gralnick and Brewer 2017). However, in 2017, Gralnick and Brewer reported, “the industry is working to encourage young people to become lobstermen, making it easier to get a license before the age of 23” (Gralnick and Brewer 2017:3). Those under age 18 who have completed an apprenticeship can receive a license once they turn 18. For others, there are extremely long waiting lists to be able to attain a license (Dayton et al. 2014). Though the folk management strategies practiced prior to 1997 have shifted to more formal regulations with the introduction of Lobster Zones, the camaraderie present in harbor gangs is still at work. In a report on Downeast Maine fishing communities, researchers Hall-Arber et al. describe how a lobster fishers’ social connections matter even within a formal management structure. They write, “...to control new entry is the requirement that anyone entering lobstering must spend 200 documented days and two years as an apprentice to gain a license. Thus, existing social capital networks place some controls on who gets in and who doesn’t. At the same time, newcomers are inculcated with the local folk mores and values of fishing, and where existing, conservation measures” (Hall-Arber et al. N.d.:375).

Lobster Economy

Over the past several decades there has been a net increase in both the amount of lobster caught or ‘landed’ and profitability in the lobster industry. In 1950, 20 million pounds of lobster were landed in Maine (Dayton et al. 2014); by 1990 this number increased by 10 million pounds (Dayton et al. 2014) and by 2016, 131 million pounds of lobster were caught off the Maine coast (Gralnick and Brewer 2017). The lobster fishing industry has been considered the “state’s most valuable fishery” (Overton 2016) and 80% of Maines’ seafood profits were made by the lobster industry in 2011 (Steneck et. al 2011). In 2016 the Maine lobstering industry collectively made

\$533.1 million dollars (Randall 2017). Further, Maine is responsible for approximately 90% of lobsters caught in the United States (Dayton et al. 2014) and in recent years overseas trade has become important to the industry (Gralnick and Brewer 2017). In 2016, 13% of all U.S. lobster exports went to China (Gralnick and Brewer 2017) suggesting, that while lobsters are largely caught in rural isolated areas, these communities are connected in tangible ways to the larger global economy.

Despite the overall growth of the lobster industry, there is concern about its sustainability in respect to environmental changes as well as market fluctuations. For example, in 2012 historically warm waters resulted in early landings and thus there was a larger supply than demand for lobster, driving prices to drop dramatically (Dayton et al. 2014). As a result of climate change the lobster populations have dramatically decreased in parts of southern New England (Dayton et al. 2014) and there is concern that similar patterns will occur in Maine (Steneck et. al 2011).

Should the lobster population decline, dependence on the near monoculture of Maine's fisheries poses a threat to the state's economy (Steneck et. al 2011). Further changes in the lobster resources have the potential to devastate many coastal communities that are almost completely dependent upon the fishery. For example, Downeast Maine has some of the highest household income dependencies in the state with 81% of households depending on income from lobstering in Zone C and 77% depending on it in Zone A (Dayton et al. 2014:14). The lack of well-paying employment opportunities outside the lobster fishery and stricter regulations to alternative fisheries have pushed people towards lobstering (Dayton et al. 2014). In contrast, lobster Zones E, F and G experienced lower household income dependencies and had alternative well-paying employment options such as tourism (Dayton et al. 2014).

Coastal communities' reliance on the ocean can be attributed to the geography of these areas (Singer and Holland 2008; See also: Hall-Arber et al. N.d.). This geographically rural and isolated region made up of coves and peninsulas creates a unique culture of autonomy. The town of Cutler in Downeast Maine provides an example: "Cutler is representative of the highly specialized fishing communities with small populations and limited occupational options found in Downeast Maine. People do their own bookkeeping, entertain themselves at home, save money and leftovers of anything and everything, and maintain a sense of self-reliance that harkens back to an era when rural America was where most Americans lived and small-town values guided people's lives" (Hall-Arber et al. N.d.). This idea of self-reliance also links to the highly independent nature of the lobster fisher that Acheson discusses (Acheson 1988).

The profitability of the lobstering industry depends on many factors, including one's position on the boat, location and the length of the fishing season. Captains typically earn more than sternmen although they have many more expenses. In 2004 the average household income for a lobster fisher in lobster zones A, B, and C was nearly \$60,000 which was nearly \$30,000 higher than the median household income for all of Washington County (Singer and Holland 2008: 28). The lobster fishing season generally spans from early summer to early winter (Dayton et al. 2014), although some do fish year round. The winters are usually spent maintaining the boat and traps in preparation for the next year (Acheson 1988:16). In 2010, an average sternmen earned about \$18,923 during this six month span (Dayton et al. 2014).

As noted above, while the gross revenues for captains are often quite high (in 2010 the average gross revenue was \$97,333), there are many expenses that need to be paid out (Dayton et al. 2014). For captains who fished more than two quarters of the year with a sternman in 2005, about 20% of their gross pay went to their sternmen (about \$21,263). While sternmen are paid a

large percentage of a captain's earnings, boats that fish two quarters of the year with sternman have been known to make more than those without one. In 2005, for example, lobster fishers without sternmen had a gross income of \$47,854 and those with a sternman averaged a gross income of about \$106,317 (Singer and Holland 2008). Other expenses such as fuel, bait and protection and indemnity insurance ranges from 25-30% of gross pay (Singer and Harold 2008). Lobster fishers also face other investments such as traps, gear, ropes, buoys, boats, truck, engines and boat repair (Singer and Harold 2008). Nearly half of lobstermen in Lobster Conservation Management Area 1 (LCMA 1) have outstanding business loans and more than half have used personal savings to fund their fishing (Singer and Harold 2008). The average loan that a lobster fisher in LCMA 1 has is \$56,279 (Singer and Harold 2008). However, the average lobster fisher's household income is often higher than this, as lobster families often rely on additional income sources (Singer and Holland 2008).

Opioids and Lobster Fishing in Maine

This literature review has covered a breadth of topics, including background information about opioids, predictors for opioid use, treatment options, as well as information about Maine's lobster fishing communities and economies. Although opioid use is prevalent in communities across the country, there appears to be a connection between the predictors for opioid use and Maine's lobster fishing industry. This section begins to draw these relationships and examines new literature that provides a context for drug use in the lobster fishing community. Statistics regarding the study sites and lobstering communities of Machias, Deer Isle-Stonington and Boothbay will also help to inform these connections. Further information about treatment in Maine communities is presented.

Predictors

In 2017 in the state of Maine, there were 418 deaths due to drug overdoses, 354 of which were due to opioid use (Russell 2018). Though opioid use and deaths due to overdose have occurred in communities across the state, recently, high rates of opioid use in lobster fishing communities have become evident. In the past several years, there have been many fishing violations in the state of Maine that have been linked to drug use (Overton 2017). Further, another indicator of opioid prevalence in the lobster industry is the high rate of turnover on lobster boats due to drug related deaths of crew members (Overton 2017).

While drug use data by profession does not exist in the state of Maine, other literature can, in part, support connections between drivers for opioid use and lobster communities. Death rate data suggests high rates of drug use in some of Maine's coastal communities. Washington County, for example, that encompasses Lobster Zone A and includes the lobster fishing area of Machias, had the highest drug related death rate of any county in the State of Maine at 19.7 deaths per 100,000 people in 2015 (Diomedea 2015: 15). However, Hancock County, which aligns with Lobster Zone C and Deer Isle-Stonington had the fourth lowest drug overdose death rate in the state at 8.5 deaths per 100,000 people. Other coastal communities located further south like Lincoln County (in which Lobster Zone E and Boothbay Harbor are located), saw an average of 13.7 drug related deaths per 100,000 (Diomedea 2015: 15). This variation suggests that while opioid use is quite high in some lobstering towns, it may differ across the coast.

The typical lobster fisher fits many of the demographics of drug users proposed in the literature as well as Maine specific drug statistics. The average Maine lobster fisher is 50 years old (Singer and Holland 2008), is likely to be male (Acheson 1988) and is more likely than others in their area to have not completed secondary education (Singer and Holland 2008).

These typical demographics for the lobster fisher are consistent with the *Deaths of Despair* literature by Case and Deaton (2015) that propose white, middle aged working-class men are seeing increases mortality rates. The economic and demographic make up of coastal fishing towns are also consistent with the *Deaths of Despair* literature. For example, the high household income dependencies in Lobster Zones A and C (Dayton et al. 2014) suggest that there are few alternatives to fishing, thus supporting the notion of “cumulative disadvantage” as explained by Case and Deaton. Further the racial make up of the counties that encompass coastal communities are primarily white. For example more than 90% of the populations in Washington Hancock and Lincoln counties were white (U.S. Census 2016 “QuickFacts”).

High rates of suicide in Maine’s coastal communities further support the notion of *Death’s Despair* within the Downeast community. For example, in 2015 the Downeast public health district (made up of Washington and Hancock Counties) reported the second highest suicide rate in the state at 19.9 per 100,000 people yet, it was the lowest for referral calls inquiring about mental health and human services in the state (Hornby 2016: 79). Perhaps the mismatch in deaths due to suicide and calls for help is due to the independent ideology described among lobster fishers (Acheson 1988) living in rural Maine communities and not wanting to ask for help.

While the lobster industry as a whole is aging (Dayton et al. 2014), there is also a large cohort of young fishers (Dayton et al. 2014:7) in the industry. It is possible that young fishers may be more likely to use opioids than older fishers based on drug use statistics in coastal communities. For example in the Downeast public health district, 18-25 year olds were nearly three times more likely to have misused prescription drugs in the past year than those who were 25 years or older (Hornby 2016: 14). Further, the primarily male-dominated lobster industry may

factor into drug use, as trends in the state of Maine suggest males are more likely than females to have experienced an overdose as indicated by having been administered Naloxone (Diomedea 2015:21).

The fishing industry as a whole has been shown to be an especially dangerous profession (Janocha 2012). Therefore, based on the work of Rigg and Monnat (2015) who suggest that being a manual laborer increases one's likelihood of prescription opioid use, it can be inferred that one's chances of using prescription opioids to treat a work injury are high in the manual labor profession of lobster fishing. Janocha 2012 describes the dangers of fishing, writing that the industry "is characterized by strenuous work, long hours, seasonal employment, and some of the most hazardous conditions in the workforce" (Janocha 2012). Additionally, contributing to the hazardous nature of fishing is that "access to on-site medical care for these workers is limited to the knowledge of those on the boat with them or the response of the coast guard" (Janocha 2012).

The fishing industry is a hazardous place to work and "in 2009, the rate of fatal injury for fishers and related fishing workers was 203.6 per 100,000 full-time equivalent workers, which is more than 50 times the all-worker rate" (Janocha 2012). The Bureau of Labor and Statistics does not have industry specific data on lobster fishers but instead they are grouped with the broader category of fishing when classified (Janocha 2012). In Maine specifically, there was an incidence rate of 138.8 per 10,000 full time workers for nonfatal injuries in the fishing industry in 2015. Further, the incidence rate of injury due to overexertion and bodily reaction was 57 per 10,000 full time workers, demonstrating the dangerous and physical nature of fishing (U.S. 2016b).

Although there is not extensive literature, some have also noted substance use as part of the lobster fishing culture. Acheson argues that that “laziness, alcoholism, drugs, stupidity” are traits attributed by those who do not do well (Acheson 1988: 53) However, Acheson also describes behavior such as alcoholism as excused if a fisher does well. He writes, “A foul-mouthed boor, a drunk, or a vicious gossip does not seem so bad if it can be added ‘but he is a good fishermen’ (Acheson 1988: 52). While Acheson suggests that drug use is tolerated to some extent within the industry, one lobster fisher and story-teller writes about how alcohol use is a primary mode for connection:

Drunks are woven through lobster stories like shards of blue mussel shell in shore sand. The public’s conception of hard-drinking fishermen, however is grossly overrated. Drink they do, but a daily hangover is not an enjoyable mate all day long on a bouncing boat engulfed in continual roar from an eight-cylinder mechanical bull. Lobstermen use the spirits as a topic, a theme subject, a class assignment. In a provincial, narrow social life, there are acceptable subjects for gossip and others are better left untouched. Booze can be bandied about (Brown 1985: 17).

Though there have been mentions of drug use within the lobster industry, by Acheson, Brown and others, there is a shortage of academic literature about drug use in this community.

Treatment in Maine

In the past year deaths due to drug overdose increased more than ten percent in the state of Maine (Russell 2018). In response to the quickly increasing opioid epidemic, government officials in Maine are working to help those who are affected. On September 8, 2017, Maine Senator Susan Collins who works on the Senate Appropriations Committee, announced the passage of a new bill that allocates funds to opioid treatment and prevention programs at the national level (WAGM 2017). Senator Collins recognizes the severity of the opioid epidemic in Maine and is working hard to get people the help that they need. She states, “I am delighted that the Committee approved our bill that will help break the cycle of addiction by boosting

prevention efforts and expanding treatment options” (WAGM 2017). Other acts to curb opioid use in Maine have been put into effect as well. The Maine Opiate Collaborative for example was created by a group of attorneys and state level officials and is addressing opioid use in a three-pronged manner. The collaborative seeks to address harm reduction/prevention, treatment and law enforcement (Smith 2016). Other prevention strategies such as stricter participation in the Maine Prescription Monitoring Program and the addition of drug enforcement agents have also been implemented at the state level (NDEWS 2016: 9). Though many policy changes in Maine have been implemented, a nationally representative study reports that most Americans believe that the burden of solving the opioid epidemic should be placed on opioid users and their doctors (Barry et al. 2016: 90).

While people around the state have been working hard to address opioid use, there are many barriers to treatment and prevention. The cost of treatment for opioid addiction is very high and many Mainers do not have access to the help that they want (Russell 2016). For example, Narcan, the lifesaving drug used when someone overdoses, is \$30 per dose (Opioid 2017) and the treatment drug Suboxone is in higher demand than Maine doctors who are able prescribe it (Russell 2016). As reported in *The Portland Press Herald*, “There are 25,000-30,000 people with addiction in Maine who can’t get the help that they need” (Russell 2016:1). Further, Maine has tightened the restrictions about who can qualify for MaineCare, Maine’s Medicaid program, leaving more people without access to treatment (Russell 2016). Washington County particularly has a desperate lack of resources as one lobster fisherman and ex-heroin addict relates that “the jail is the only detox center” (Randall 2017). Despite the clear need for treatment, there is a concern within the Washington County community that even if funding is allocated towards a detox center there will not be the staffing or the expertise necessary to support this sort of

operation (Randall 2017). Some have suggested that the stigma around asking for help, specific to the lobster community, may prevent people from seeking treatment (Overton 2017: 6).

The Current Study

Based on the literature it is clear that opioid use is a growing epidemic that is affecting many communities across the nation. There are a variety of predictors of drug use including social, geographic and demographic predictors that are consistent with the population of Maine's lobster fishers. Though there have been documented hints of alcohol and drug use within Maine's lobster fishing community there is little empirical understanding about why this community is affected. The following study aims to examine lobster fishing communities and their relationship with opioids to provide a more systematic understanding of the following questions: 1) what are the drivers behind opioid use in the lobster fishing industry and are these factors community specific, and 2) what are effective opioid prevention and recovery techniques for lobster fishing communities. This thesis will examine local Maine lobster fishers in the context of drug use through a variety of qualitative interviews which will be conducted in a variety of lobster fishing towns in Maine to help provide answers to these questions.

Methods

The following chapter will review the methodology used to gather and analyze the data in this thesis. The chapter begins by expressing my (1) *Statement of Positionality* as a researcher, then moves to discuss the (2) *Sample*, followed by the (3) *Data Collection* process and finally reviews the (4) *Data Analysis*.

Statement of Positionality

I am approaching this research as a white, upper-middle-class, college-educated woman. Therefore, I have a variety of privileges and biases that I am bringing to this investigation. Additionally, I have no previous or personal experience with lobster fishing communities or with work on opioid use and abuse. My relative unfamiliarity with this community can be advantageous in terms of approaching research with a sense of objectivity, however, it also allows room for my unfounded assumptions to show through. Further this lack of experience can also serve as a disadvantage as I am an outsider in this community, and it will take time to build rapport within it. Though I may not have a personal stake in the issue, I care deeply about the health and wellbeing Maine communities, as I have called this state home for the past four years.

Sample

This investigation was conducted using qualitative research methods and a combination of in-person and over-the-phone semi-structured interviews. Interviews were conducted with lobster fishers (captains and sternmen), health care professionals, legal professionals and community stakeholders. Community stakeholders included people with a variety of social roles including educators, professionals at non-governmental organizations and institutions, and general community members. The variety of social roles held by interviewees allowed for a wide range of perspectives on the issue of drug use in the lobster industry.

Penelope Overton, the author of multiple newspaper articles exposing the issue of opioid use in Maine lobster fishing communities, was used as a key informant and snowball sampling was used to further identify participants. Additionally, interviewees were identified from online directories of lobster fishing organizations and through personal contacts. This method of nonprobability sampling was used because there is no established list of lobstermen to randomly sample from. The limits to this sort of research design is that the sample may not be representative of the entire lobster fisher population and therefore generalizability is limited.

Twenty individuals (N=20) were interviewed from three coastal Maine communities, labeled throughout this study as the Boothbay Area (N=5), the Deer Isle-Stonington Area (N=6), and the Machias Area (N=6). Three additional participants (N=3) were interviewed who did not fall discreetly into one of these study areas, and rather worked with coastal communities more largely. Because there is not an established directory of lobster fishing communities in Maine, these study areas could not be picked at random. Instead these communities were identified by their unique attributes and how they represented the industry at large. These three study sites each present a unique view into the lobster fishing world and together encompass the diversity of the lobster fishery. The map below (Figure 1.) depicts these study sites and their locations within the state of Maine.

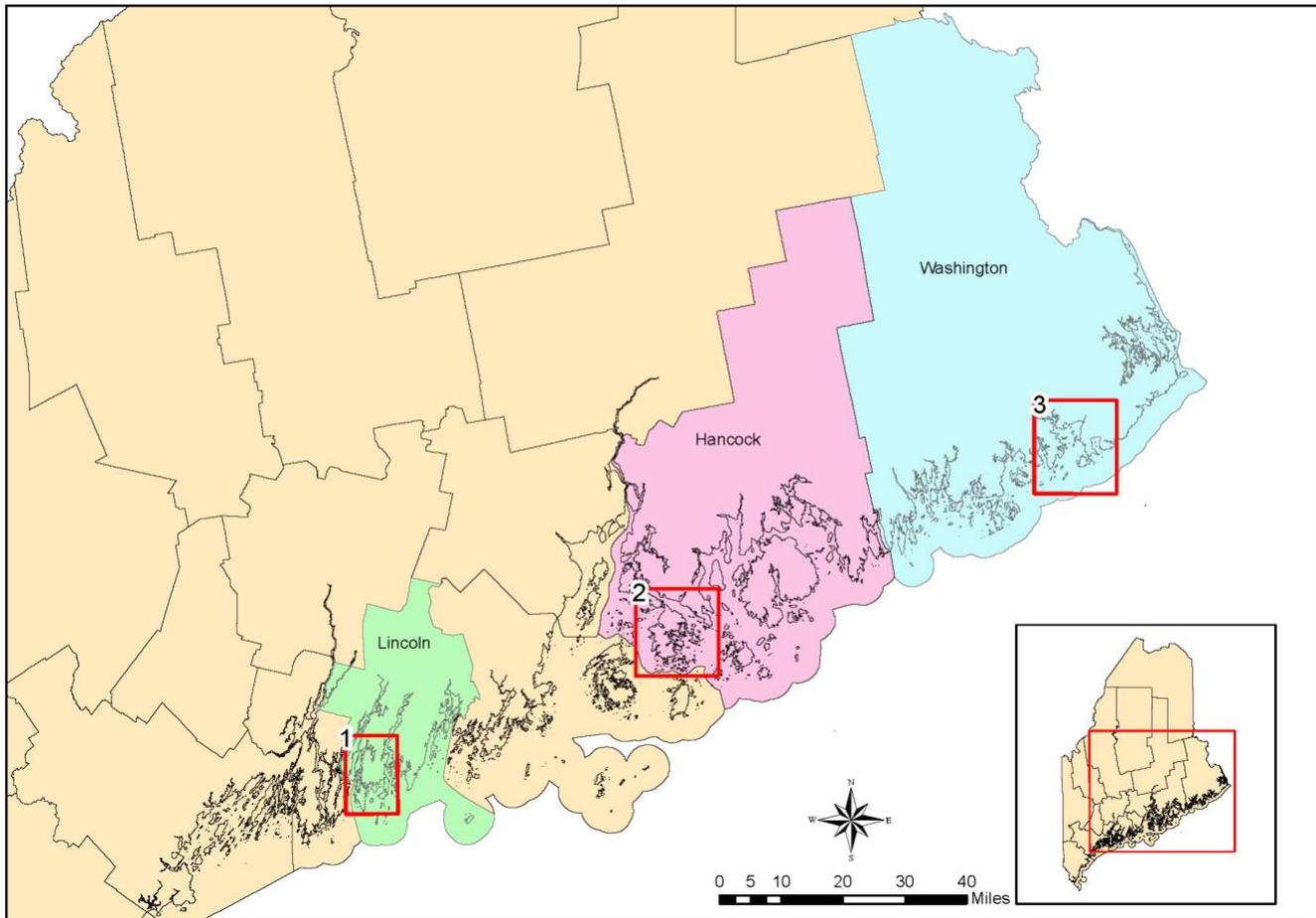


Figure 1. Map of study sites and respective counties. Study site 1 is the Boothbay Area; study site 2 is the Deer Isle-Stonington Area; and study site 3 is the Machias Area

The first study site (labeled as 1 in *Figure 1.*) is the Boothbay Area. The Boothbay Area, defined broadly to encompass participants from Boothbay Town and Boothbay Harbor, is geographically and economically distinct from the Machias and Deer Isle-Stonington Areas. The Boothbay Area is closer to urban areas and has less dependence on the lobster fishery than the other two study sites. The population density of Lincoln County, in which the Boothbay Area is located has a population density of 75.6 people per square mile (U.S. Census 2016 “QuickFacts”), more than six times the population density of Washington county, where the town of Machias is located. Further Lobster Zone E (Boothbay Area) has one of the lowest

lobstering household income dependencies in the state (Dayton et al. 2014) and gathers just a quarter of the per pound landings of Lobster Zone C (Deer Isle-Stonington Area) (Department 2017). Additionally, the town of Boothbay has a poverty rate of 9.7% (U.S. Census 2016 “Boothbay”).

The towns of Deer Isle and Stonington (included in area 2 in *Figure 1.*), both located on Deer Isle Island, are considered a singular study area in this thesis, but have separately recorded data at the Census level. The town of Deer Isle has a poverty rate of 8.2% while the town of Stonington has a poverty rate of 16.8% (U.S. Census 2016 “Deer Isle”, “Stonington”). The Deer Isle-Stonington community is located in Hancock County, a region that has a population density of 34.3 people per square mile (U.S. Census 2016 “QuickFacts”). Stonington Maine, is considered Maine's Lobster Capital and has nearly 200 boats in its port (Overton “Many in Stonington” 2017). Lobster Zone C, where Deer Isle- Stonington, is located saw the highest per pound landings of any Zone in the state with 27,679,499 pounds valuing \$107,828,705 (Department 2017). Unlike other lobstering communities, lobstermen in Stonington fish with more crew members, on large boats, in deep waters year round. (Overton “Many in Stonington” 2017). Thus Deer Isle-Stonington was chosen because of its large scale fishing production.

The final study site, the Machias Area (labeled as 3 in *Figure 1.*) is the northernmost study area and includes the town of Machias and its surrounding fishing ports. The Machias Area is located in Washington county, a region that has the lowest population density, of 12.8 people per square mile (U.S. Census 2016 “QuickFacts”) than any of the other study sites. Further the town of Machias has a higher poverty rate than the other two study sites at 20.1% (U.S. Census 2016 “Machias”). Additionally, the Machias Area is located in Lobster Zone A which saw the second highest pounds landed in 2017 (Department 2017) and the second highest household

income dependency (Dayton et al. 2014). The Machias Area was chosen to represent the rural and isolated nature of many lobstering communities and also a region that experiences high poverty rates.

Together these community selections allow a view into the diversity of the lobster fishery, accounting for lobstering communities that range in dependency on the resource and their size and proximity to urban centers. This scope of communities provides a range of voices and opinions, thus maximizing the representativeness of the sample geographically.

Data Collection

Most interviewees were contacted by phone, email or social media to request their participation in the study, though some were asked on the spot, in-person. Interviews were conducted both in-person and over-the-phone with consenting participants. In-person interviews were conducted in public places that were comfortable and convenient for the interviewee but still provided an element of privacy. Examples of locations for interviews include cafes or places of work. Over-the-phone interviewees were conducted in private locations as to avoid conversations being overheard.

Interviews consisted of a series of questions (see Appendix A) that began broadly to gather background information and moved to more specific questions about opioid use in lobstering communities. Consent forms (see Appendix A) and information about confidentiality were presented before interviews began. For over-the-phone interviewees confidentiality documents were read aloud to participants and verbally consented to. Written consent was also obtained after over-the-phone interviews with most participants.

Audio recordings of interviews were taken on either an iPhone or recording app on a laptop and were later transcribed into written prose. Notes were also taken during interviews, and for some interviews this was the only method of recording used. Interviews ranged in length from 15 minutes to 60 minutes depending on the participant and their time constraints.

Data Analysis

Interviews were transcribed from audio recordings, or from written notes, and identifying information was removed, such as names, job titles etc, to protect interviewees privacy. The transcribed interviews were then analyzed using the qualitative data analysis program NVivo. On a primary read through common themes were detected and coded for. Themes fell into two primary categories: (1) drivers for opioid use (2) treatment and prevention. Within the category drivers for opioid use, the primary themes that emerged included: *Work Environment, Limited Social and Economic Options, Availability and Access, Manual Labor, and Broader Community Factors*. The themes that emerged in the treatment and prevention category were: *Existing Treatment, Barriers to Treatment, and Prevention/Solutions*.

After these preliminary themes were defined, on a second read through, sub themes were detected and defined. Each theme was reviewed many times to attempt to be as systematic and consistent as possible. Quotes that best represented the themes that emerged were chosen for the results section.

Results: Part I

The following two chapters report the data collected from twenty interviews conducted in lobster fishing communities across the state of Maine. Chapter 4 will focus on data that seek to answer the question: What are the drivers behind opioid use in the lobster fishing industry? Chapter 5 will focus on data that answer the question: What are effective opioid prevention and recovery techniques for lobster fishing communities? Both sections rely heavily on the voices of interviewees to provide the most authentic understanding of how those in lobster fishing communities perceive opioid use. To maintain the integrity of the comments made by interviewees, recorded interviews were transcribed word for word without editing.

This chapter, Results - Part I, will first provide context by describing who the interviewees were, where they came from and other information about this sample. Next, major themes will be examined beginning with the prevalence of opioid use in the lobstering line of work, then the demographics of opioid users, and finally a section titled “Thematic Exploration of Driving Factors.” This driving factors section is broken up into five themes: (1) *Work Environment*; (2) *Limited Social and Economic options*; (3) *Availability and Access* and (4) *Manual Labor*; (5) *Broader Community Factors*, each of which is broken into sub themes.

Descriptives

The following data were collected from twenty interviewees (N=20) in three different lobster fishing communities. The first study area was the Boothbay area, which includes participants (N=5) residing in the towns of Boothbay and Boothbay Harbor. Deer Isle-Stonington was the second study area and interviewees (N=6) who lived and worked in either of these island towns were interviewed. The third study area was the Machias Area, which includes participants (N=6) who lived or worked in the town of Machias and its nearby fishing ports. Three additional

interviewees (N=3) who worked in various capacities with the populations being investigated were not categorized to any one study area but rather representative of the coastal communities more generally. These interviews have been labeled as being from “coastal communities” throughout. An additional note is that interviewee 19 has worked with Washington and Hancock counties in particular (which include the study areas of Machias and Deer Isle-Stonington, respectively) and therefore provides information about those communities specifically. The vast majority of participants (N=17) were male identifying while three (N=3) were female identifying.

There was variation among interviewees’ role within the lobster fishing communities. Participants fell into four primary categories: lobster fishers (N=7); healthcare professionals (N=3); legal professionals (N=2); or community stakeholders (N=8). The specific role of each community stakeholder has not been recorded here as to protect participant identities. Examples of community stakeholders include: educators, law enforcement officials, community organization leaders, community members in recovery and general community members. Table 1. provides a summary of the interviewees in the study along with their community position. Each interviewee has been given a number (based on the order of the interview) which will be used throughout the results to cite who is talking.

Table 1. Participants

Location	Position in Community	Interview Number
Machias Area	Community Stakeholder	1
Machias Area	Community Stakeholder	3
Machias Area	Lobster Fisher	4
Machias Area	Lobster Fisher	6
Machias Area	Healthcare Provider	5
Machias Area	Healthcare Provider	2
Deer Isle- Stonington Area	Community Stakeholder	8
Deer Isle- Stonington Area	Community Stakeholder	9
Deer Isle- Stonington Area	Community Stakeholder	13
Deer Isle- Stonington Area	Community Stakeholder	16
Deer Isle- Stonington Area	Lobster Fisher	18
Deer Isle- Stonington Area	Lobster Fisher	10
Boothbay Area	Community Stakeholder	7
Boothbay Area	Legal Professional	20
Boothbay Area	Lobster Fisher	11
Boothbay Area	Lobster Fisher	14
Boothbay Area	Lobster Fisher	17
Coastal communities	Community Stakeholder	15
Coastal communities	Healthcare professional	19
Coastal communities*	Legal Professional	12

*focus on Washington and Hancock counties. These align with Machias and Deer Isle-Stonington areas

Prevalence

Though the focus of this project was based on the notion that opioid use was prevalent in the lobstering community, as reported in a Maine newspaper series, it is important to note community perceptions of the prevalence of opioid use in the industry and that these articles were not hard evidence. Twelve participants said that opioid use was not specific to the lobstering line of work but rather, as one lobster fisher from Boothbay put it, “a pervasive social problem, not just in Maine but in the United States” (Interview 10). Others supported this sentiment, feeling that the industry received unfair attention because of the fisheries’ centrality to Maine’s identity. As one fisher from Machias stated, “So drug use isn’t specific to the lobster industry. As important as the industry is to the state and coastal communities the more of a spot light there is on it and everything, so that’s where the stories are coming from” (Interview 6). Interviewees also identified other industries that they perceived to have high rates of opioid use and misuse. One healthcare professional from Machias stated, “In this area the story, the hot story is lobster fishing and heroin. That is not the reality, that’s not real that’s not true... lobster fishing and heroin is a deal, it’s an issue, but I’m telling you, in this area every trade has heroin” (Interview 2).

Interviewees pointed to people of all professions and walks of life as users of opioids, but commonly mentioned were manual labor industries. Trades like logging, construction and other fishing industries such as periwinkling, worming and clamming were noted. The clamming industry was identified the most frequently, by seven interviewees (three of whom were asked directly and four that commented of their own volition) as a line of work that sees a great deal of opioid use. One interviewee explained why this seems to be the case, “There’s more heroin in clam digging than in lobster fishing because in clam digging you don’t have a boss. You just go out in the clam flat and dig clams. And sell ‘em four hours later, and you get cash in your hand.

That's a heroin addict's dream really" (Interview 2). Another interviewee described the physicality of clamming,

I mean clamming, you know, a day job that's pretty much anyone can go and do if they want to and it's back breaking work...you know you're bending over and that's another thing its a physical pain, sore to the back. And I'm sure it feels like a thing [opioids] if they do it the next day they'll feel better and then they'll go do it again and you know that's probably the cycle, pain relief (Interview 14).

Though opioid use was not commonly perceived as specific to the lobstering industry, and in fact found in many other manual labor occupations, there is no doubt of its presence within the industry. One interviewee described the visible destruction of the opioid epidemic on lobster fishing communities,

One hundred thousand a year [salary] you know it's just insane... and they have nothing else. A lot of them, you see lobstermen making so much money but you go by where they live and it's, nothing against it, but it doesn't add up cause they're living in a mobile home. Well this doesn't add up. Where's it going? Well it's going in their arm or their nose you know you can actually see it, you can physically see the damage in the community what they're doing (Interview 12).

Though opioid use may not be unique to the lobster industry, the following data examine the ways in which interviewees understood the factors that facilitated drug use in the lobster industry and scenes like this interviewee described.

Demographics

Interviewees commented on demographics of those who used, primarily in regards to age. Other factors such as race, class and gender were not often mentioned as the majority of lobster fishers share the similar demographic features of being white, working class and male. However, it is critical to note the rise of female fishers in the industry as of late (Interview 10). Further, males were noted as using more than females by five participants, while two said use was evenly split among males and female. One interviewee made an important distinction when considering the gender of a lobster fisher using opioids, "[it is]... hard to tell, there are more men in the

commercial fishing industry in general so I mean if you were gonna look at it and not get into, it seems like it [opioid use] impacts men” (Interview 10).

In terms of an age break down of lobster fishers who use opioids, eight interviewees suggested that young people were the most affected by drug use. One interview stated, “Mostly younger, in my generation the 20-30 year olds are the ones that I’ve known, that I’ve seen that have really been into it bad and kind of lost everything and had to start over” (Interview 17). A community stakeholder stated, “Of my patients 90 percent were addicted before they were 20 and in their mid-teens. Once someone's addicted it’s a lifelong disease, you're always in recovery even if you're sober...the brain’s been changed permanently... drug use is starting early in adolescents and beyond that, there’s still the rest of their life to fight that problem. I see people from 18 to about 65” (Interview 19). Two additional interviewees described middle aged users. For example, one health care professional stated, “Umm hmm, I’d say that it’s been mostly the 20-40 year olds in my opinion, or in my day to day work” (Interview 5). Another interviewee described the use of the older generation, “I do think that a lot of people especially older people who struggle with heroin or opioids in general they started with that prescription from the doctor.” (Interview 15)

Thematic Exploration of Driving Factors

The following section will review the primary themes that emerged as driving factors of drug use in the lobster fishing industry. The primary themes are: *Work Environment, Limited Social and Economic Options, Availability and Access, Manual Labor, and Broader Community Factors* and each of the sections has been broken down into subthemes. The following tables provide a preview of the most common driving factors (subthemes) for opioid use in the lobster fishing industry. Table 2. provides a breakdown of these driving factors by study area. Table 3. describes the most common driving factors by the interviewee’s role in the community. While

the populations of each study area/interviewee role are too small to make meaningful comparisons, the breakdown of the driving factors by group the allows for an understanding of the data collected.

Table 2. *Most Common Driving Factors by Study Area*

Driving Factors	Total	Machias Area (N=6)	Deer Isle-Stonington Area (N=6)	Boothbay Area (N=5)	Coastal Communities (N=3)
Making Money	19	6	6	4	3
Injury	15	4	4	5	2
Work Environment	15	4	5	4	2
Boredom	12	6	2	2	2

Table 3. *Most Common Driving Factors by Interviewee Role*

Driving Factors	Total	Lobster Fishers (N=7)	Health Care Professionals (N=3)	Legal Professionals (N=2)	Community Stakeholders (N=8)
Making Money	19	7	3	1	8
Injury	15	6	3	1	5
Work Environment	15	7	3	0	5
Boredom	12	3	3	1	5

Work Environment

The work environment of lobstering surfaced as a factor that allowed for the use of drugs within the industry. Fifteen interviewees (four who were asked directly and 11 who brought it up independently) commented on the work environment as a factor for drug use and five primary sub themes were identified: (1) *Role of Fisher*; (2) *Nature of Work*; (3) *Tolerance for Drug Use*; (4) *Lack of Responsibility from Unions*; and (5) *Difficulty Hiring*.

Role of Fisher: Sternmen vs. Captain

Among those in the lobstering industry, sternmen (crewmembers) were identified as being more likely to use drugs as opposed to captains or the owners of the boats. Without being directly asked, ten interviewees referenced sternmen as members of the lobstering industry who used drugs. Some identified sternmen that they knew who were using, while others suggested that sternmen were more likely to use than captains. One lobster fisher commented on a sternman's use, "... my neighbor two doors over had a sternman from Machias that ended up, he just said he was into drugs. He didn't say what he was using and everything but he didn't last long" (Interview 6). In response to being asked if those in the lobster fishing line of work were more likely to use drugs than others in the community, a healthcare professional responded, "I've known of several lobstermen and women that did get addicted. I would say that it's more in the sternmen, the stern person, than the ones that own the boat" (Interview 5). An eleventh interviewee when asked directly if there was a population within the industry that used more than others, answered "I think any number of sternmen and deckhands and anything along that line, well, actually I know there are. The difference being again that they aren't really accountable to anybody except for the person that they work for and they can jump ship you know and work for somebody else at anytime" (Interview 20).

In contrast to those that mentioned sternmen as users, only five interviewees alluded to the knowledge of captains using drugs. Two referenced the Hutchinson case, of the lobster captain that sunk his ship while under the influence of opioids (Interview 4, Interview 14). Another interviewee, a lobster fisher captain, discussed his past use of drugs, "Yeah, I mean my sternman was using and you know I hired the drug dealer because I figured well, I needed drugs. I might as well have the drug dealer working for me on the boat. We was all doing it everybody was doing it" (Interview 11).

Four interviewees pointed to the nature of the work of a sternmen versus that of a captain as an explanation for this observed difference. They explained that a sternmen has to show up for work and be able to produce, but beyond that has little responsibility. Captains on the other hand have an enormous amount of liability and responsibility in running their boat and their business. One interviewee discussed the accountability of all boat activity as ultimately the captain's responsibility as opposed to the sternmen's,

When lobstermen are involved in it [drug use]...the violations start happening and that's where there are issues. That being said sometimes it does cross over, sometimes lobstermen are very trusting of their sternmen and they allow them to do the measuring and checking of their lobsters so we start seeing violations of their regulation showing up and it's the sternman's fault. But in that situation the license holder is still responsible for the catch on board. So somebody else may be pushing the rules a little bit on the boat but somebody else is going to get caught holding the bag basically..." (Interview 20).

One captain further explained the difference between roles, "Yeah, we're running a business. I got payments on the boat, I got to make money and I don't think that works well when you're a drug addict. It's tough to be successful in the business as it is. You have to work hard you have to make the right decisions and if you're influenced by drugs all the time, I don't think that works out well" (Interview 14). He continued discussing the nature of the sterning position, "All you gotta do is drag yourself out of bed and show up. And you know they're going to give you your cash money...And it's not make decisions all the time, paying all the bills on it" (Interview 14). One lobster fisher elaborated on this notion, identifying a difference in work ethic and desire for responsibility between the sternmen and captains, "There are some sternmen who are really good but they don't want the responsibility of the boat" (Interview 6). He summarized, "There's a captain in town that says that sternmen are sternmen for a reason you know, cause it is their mindset, it is just the way they are. For them to, if they could be a captain if they could run a boat that's what they would have been" (Interview 6).

Nature of Work

Of the 15 interviewees that discussed the work environment as a factor for drug use, 11 suggested that the nature of lobstering work allowed a space for drug use. Five interviewees explained how the type of work that fishers are doing creates this space. One community stakeholder articulated,

I don't in anyway want to say that it doesn't require you know, real skill and a lot of deep understanding of the oceans and currents. But once that's sort of ingrained in a fisherman they can sort of count on it in a way that because of the repetition of the work they don't have to be constantly sharp in the way that different types of jobs require them to be... So I think that the actual work of lobstering makes it so that people can really be successful and really fulfill their obligation to their job and to their family to produce to provide and still have this addiction (Interview 15).

Another community stakeholder further pointed out the ability for workers to go unnoticed at work while under the influence of drugs. One community stakeholder stated, "And it's easy for these guys to hide because they go to work in the dark of morning and they might stumble on the boat and do their thing" (Interview 13). One captain spoke from experience, "Yeah, I mean you know when I was using, I was working the whole time, yup" (Interview 11).

Seven interviewees described the solitary nature of the lobstering industry. Some mentioned the freedom of lobster fishing as one the best parts of the job. One lobster fisher stated, "Well the best parts of the job are the freedom of being on the ocean and not having to deal with everyday life. It's nice to be out there alone in the open fresh clean air" (Interview 17). Interviewees also identified the freedom and solitary nature of lobster fishing as a factor allowing for drug use. One community stakeholder noted, "Another factor in terms of fishing that lends itself to drug use is that it is a completely unregulated work environment... their work environment that's 40 feet by eight feet that's moving all around and all over all the time. It's not like a factory where you are being watched. A lot of behavior is accepted on the boats" (Interview 9).

Three interviewees commented on how there is little accountability in terms of who captains hire because lobster fishers are self employed. One lobster fisher describes this lack of oversight as compared to other occupations. He stated, “But usually they’re not technically employed, they’re self-employed so they don't have a lot of responsibility on their part in that way. You know, I think if you run a real business or like a store you’re actually employing them and filling out all this paperwork...lucky for us, there's really not a lot of responsibility for who you hire or what they're up to” (Interview 14). Another lobster fisher summarized the independence of lobster fishing in both the governance and physical environment, “I mean they’re all self-employed, its all self-employment. And like I say you know you're out there on your own. You better do what you gotta do to survive really” (Interview 11).

Tolerance for Drug Use

Eight participants discussed the tolerance of drug use within the lobstering industry. There was a spectrum of the tolerance described, from stories of explicit encouragement of use to circumstances in which fishers were having difficulty but doing their job. One lobster fisher commented about overt use, “I’ve heard of sternmen doing it right on the boats just to keep them going through the day. Like they’d get “dope sick” on the boat and not even be able to work, like pretty much shoot up and they could get through the day” (Interview 18). Another lobster fisher reconciled with drug use on the boat, “There are people in this area fishing or non-fishing that are addicts that cope. And they struggle and they have their demons but they cope with it and they’re not a danger to anybody and they’re working” (Interview 4).

Though many interviewees pointed to the wide range of behavior that is accepted on the boats, five interviewees discussed how there is no room for using opioids on boats. One fisher from the Deer Isle-Stonington area observed that captains in their fleet have little patience for drug use, “You know a lot of those people have become undesirable and unhireable to have as

crew members so unfortunately for them a lot of, I wouldn't say a lot, but the majority of drug users in our community are no longer employed in the fishing industry” (Interview 10). One captain from the Boothbay area acknowledged the tolerance of bad behavior on boats also noted the importance that he can trust his sternmen to not have drugs on them. He stated, “You get boarded by the coast guard and you’ve got drugs... you know we got a plaque right there ‘no illegal drugs’” (Interview 14).

Lack of Responsibility from Unions

Though captains in the lobster industry are self-employed there are a variety of associations, councils and other groups that they engage with. Of the seven lobster fishers interviewed, five of them were involved in some sort of labor organization, while two were not. Many found that these organizations were useful and provided a sense of unity when addressing certain issues within the fishery, while others preferred self-advocating. One lobster fisher explained,

When you go up to them and you're a member of say the Lobster Association they're going to listen to what you say but they're going to take it with a grain of salt because they are thinking of you as part of the association. I always thought it was more useful if you call someone on the phone and just be your own opinion and not have the association involved. That's just my opinion on that... I don't know. A lot of people are members of the lobster associations...(Interview 14).

These union-like organizations have struggled with how to address the opioid epidemic within the industry and by default have left a system in which opioid use is tolerated. One lobster fisher discussed how it is not the responsibility of the organization he is a part of to approach the issue of opioid use and abuse,

“we’ve got so much going on we couldn’t even think of tackling this problem. And people are like why don’t you... once we open that can of worms, you know it's tough. We just can’t... one thing is we’re not experts. I mean we’re good at what we do. But that’s not our wheelhouse that’s not where we are you know” (Interview 4).

Further, a community stakeholder noted the governing body that regulates Maine's lobster industry is not taking claim of the issue, “I mean the Department of Marine Resources has sent really clear signals that they don’t want to go down that road. That they’re worried about the perception that it creates...The commissioner would say if you're addicted to opiates in a different industry you might suffer penalties as a result of criminal action...” (Interview 16).

Difficulty Hiring

Seven interviewees discussed the lack of available sternmen as a problem within the industry. Of the four participants who were asked directly if they knew if finding a sternmen was difficult, all said that it was indeed a difficult task. One lobster fisher from Boothbay attributed the difficulty of finding sternmen to the undesirability of the work. He stated,

It definitely is [difficult to find a sternman], in general and just as far as being around here. I think Downeast they have a little more of a bigger problem with finding clean sternmen, but it’s a problem in general because like I said it’s a tough job and not a lot of people want to put up with the work and get up at three-thirty in the morning go out get home at five o’clock at night. You’re beat up and sore and I mean it's only decent money if you cheat on your taxes so you know people are getting cash and not reporting it. Otherwise they take 30% of it and there not making any better money than Hannaford. So it is hard to find sternmen and that is kinda the reason (Interview 14).

The three other participants who were not directly asked about the how difficult it is to hire crew members offered the information on their own. One captain from the Machias Area described the difficulty of find a sternmen that was trustworthy. He stated, “Cause I went on a fishing trip in the spring or whatever and there were guys there from all different places. One of the things we talked about, wasn’t on opiate stuff, but how hard it is to find somebody good, reliable workers that you can give some responsibility to” (Interview 4). He continued, suggesting poor behavior among viable employees, “And there’s a certain time a year you need extra help and it's easy to find somebody you know just for a few months and those might be a guy that you know jumps around from job to job to job and there’s a reason you know that he

jumps around from job to job to job” (Interview 4). Other interviewees directly linked the difficulty of finding a sternmen to drug use. One community stakeholder stated, “In our community some of the older fishermen have a hard time finding what they call sober young guys to tend their boats and you know they don’t want you to know people out there are on drugs, you know it’s a dangerous place to be. And you have to have good judgement and you have to be able to trust the other guy on the boat” (Interview 13). Another participant, a lobster fisher from the Machias area corroborated, commenting on the decrease in available people to work over the years.

Online on Facebook and one of the pages is “All Things Lobstering” and there’s constantly people posting looking for a sternmen you know, and you’re looking for a sternman in October? How come you don’t [have one] and chances are whoever they had you know makes some money and whoever they had is using and then you don’t see them again and everything, so the turn over rate seems to be more excessive now than what it used to be” (Interview 6).

Limited Social and Economic Options

The major theme of having limited social and economic options because of the rural isolated nature of Maine’s coastal communities, emerged as a driving factor for the reasons people in the lobster industry began using drugs. Five primary sub themes emerged including: (1) *Boredom*; (2) *Lack of Opportunity*; (3) *Party Scene*; (4) *Peers*; and (5) *Isolation*.

Boredom

The lack of things to do in rural communities surfaced as one of the drivers that lead people to opioid use in the lobster fishing towns investigated. Without being asked, 12 participants referenced boredom as a reason people began using opioids. Participants discussed how young people had few activities to do in their freetime and on the weekends and therefore used drugs as a source of entertainment. One lobster fisher from the Machias area stated,

I think it starts with boredom, what are we gonna do? Yeah, we’re just going to sit at home and watch TV. Well, let’s go to a movie, Well, there’s no movie. Well, let’s go to the arcade. Well, there’s no arcade. There’s absolutely nothing around here. Not that you

can't go to Bangor they got the movie theater they got this, you go shopping you go to eat, you know you have to go out of town (Interview 6).

A community stakeholder from the Deer Isle-Stonington area supported the lack of things to do in rural communities as a factor involved in drug use, "Cause it's like what do you do on a Friday night? ... for lack of a better word there are no healthy options. I shouldn't say there are no healthy options but there is just not a lot to do, so what most people do is they hang out and they drive around and they smoke and drink and whatever and you know it's not really conducive to helping you stay in recovery" (Interview 16).

Two interviewees commented on the lack of recreational facilities in the Machias and Deer Isle-Stonington areas. A lobster fisher from the Boothbay area discussed the difference between Boothbay and other coastal communities in terms of their drug use and access to resources. He states,

And there's not much to do [in the other areas]. Our community has a big rec center and one of the best YMCA's in New England and it's just you know we're a pretty clean community for the most part. I mean it's not a huge community and there's not nearly as many fishermen in our area, as there are in some of the Downeast communities that are just fishermen (Interview 17).

A community stakeholder from Deer Isle-Stonington elaborated how these sorts of resources would provide alternative activities for those in the community,

And you know, I wish there was a basketball league or any other activities that they could get involved with. But there's snotty [poor weather] day like today and they're not fishing cause it's too rough out there and these rural communities they hardly even have schools that function much less a YMCA or a gymnasium or place to go do something else. So unless they really got a lot of self initiative and awareness to have a healthy hobby or healthy pastime I just think that these things show up in people's lives and they're tantalizing and they're fun for a few minutes and they become a problem" (Interview 13).

Other community stakeholders wished that there were afterschool type programs with positive role models around to engage youth and provide healthy uses of time. One healthcare professional from the Machias area said, "There's just not a lot of stuff to do to stay out of

trouble. You know, and so this is one of the things that we're doing. Getting some younger people involved as far as like a mentor you know, like a big brother type of thing" (Interview 2).

Lack of Opportunity

Six interviewees referenced the lack of economic opportunities in their towns. One interviewee explained how the lack of employment opportunities was a driver for people's drug use, "The culture around it, huh. I think part of it is, the reason people go in that direction is um, that they don't have enough to do and that they don't have hope for getting ahead in this area. So they move away. They don't have much choice in terms of the people they meet" (Interview 1).

Ten interviewees commented that lobstering was the primary industry in the Downeast communities (Machias and Deer Isle-Stonington). One lobster fisher explained how many people's livelihoods revolve around lobster fishing, "Ah well, I think a lot of it is where the money's at in our community I mean if you're not working on a boat or if you're not working at a dock that baits up boats or buys lobsters you're either mowing lawns, bagging groceries, or working at a restaurant. So I mean there's not a lot for somebody to do to make the kind of money that you can make lobstering" (Interview 18). Another discusses the centrality of the lobster fishery to the Deer Isle-Stonington economy, "Businesses shut down in the winter. When lobstermen have money people know" (Interview 9). In contrast to the Downeast districts, two lobster fishers from Boothbay noted the prevalence of other job opportunities in their community besides fishing, noting the difference between other coastal Downeast communities. "Just like I said the Downeast coastal communities really all they have is fishing, so everybody in the community is a fishermen that's why they have such a high rate. Like I said Boothbay is a pretty big tourism area and there's a ton, you know I have more friends that are construction industry than the lobster fishing industry and you know in other restaurants" (Interview 17).

Some drew a link between drug use and the lobstering community while others saw its use as a product of place. One legal professional stated “Washington county actually it's one of the worst places in the state and that's because there's tons of fishermen down there. The amount of money, there's a ton of it and it's so remote” (Interview 12). In the Downeast coastal communities interviewees explained that fishing was the primary method of income and there were few alternatives. One lobster fisher from Machias stated, “And the other thing too I mean you don't see a whole lot of other industry around here... Yeah, you probably got a few because it's the only f***ing thing there is to do (laughs). It's not like we go work the mill up the road...So of course there are going to be people in the industry because this is the only industry” (Interview 4). Another states, “It's the area, it has nothing to do with the fishing” (Interview 2). Further, one interviewee, a lobster fisher from the Deer Isle-Stonington area commented on the gender difference in available opportunities, “I mean there are more options that are available for women you might be a nurse or you might be a teacher but a lot of men just fast track right into commercial fishing straight out of high school” (Interview 10).

Party Scene

Because of the lack of constructive alternatives, many discussed partying as an activity that people take part in. The presence of opioids as part of the party scene was talked about by eight interviewees. One lobster fisher from the Boothbay Area described a common mentality among the lobstering community, stating, “Fishermen work hard and play hard” (Interview 17). A community stakeholder from Deer Isle-Stonington discussed how young fishers often partake in the party environment. He stated, “You know, they still have that party lifestyle and you know they're making a boat load of money too. And that plays a big factor in it. And they are so young and they're making that much money and they just want to play and have a good time, and so it's just more obvious. It makes it more obvious to us” (Interview 12). A lobster fisher from the

Machias area whose relative also fishes discusses concerns about him partying and using opioids. “He’s been to the gravel pit parties where people have been shooting up and again, like I said, I have concerns you know, cause it's where you choose to go and who you hang out with, the same thing...”(Interview 6).

Five participants referenced the curiosity young people have with drugs as an entry point to begin use. One healthcare professional stated, “I believe that people start using two types of ways, one way is the curiosity of it. Um, you know that’s how I started using...and then the second way which happens to a lot of people out here is the legitimate injury” (Interview 2). Another legal professional describes how quickly experimentation can turn into a habit with the use of opioids, “Kids grow up and they try alcohol so you go to college and you try alcohol so it's no different than drugs too. People go to parties there's drug they try it once and get hooked so then the habit goes up and you build a tolerance and then the tolerance builds and then there's more and more money they're going to spend” (Interview 12).

Peers

Eight interviewees discussed the limited social networks that people have in their communities and the ways that this impacts one's use of opioids. One interviewee explained how there is a lack of choice in peers to hang out with, “I think part of it is, the reason people go in that direction is um, that they don’t have enough to do and that they don’t have hope for getting ahead in this area. So they move away. They don’t have much choice in terms of the people they meet” (Interview 1). A lobster fisher from the Machias area spoke from experience of how influential one's peer group can be in regards to drug use. He stated, “Some of ‘em you grew up with some of them you saw grow up with your kids and stuff. You know, some of them you could almost see them coming. You know that kid is on the wrong path hanging with the wrong crew and it’s not going to be good” (Interview 4). A healthcare professional from the Machias

area discussed the difficulty of recovering from addiction in such a small community, where there are limited alternatives of people to surround yourself with. “And when people are addicted they are usually friends with other addicts and when they get clean it seems like it’s hard for them to leave their friends and find new friends because its like all such a small town. And um, so they might try really hard to cut ties but then they’re bumping into these people constantly” (Interview 5). Another talked about peer pressure, “But you know, it’s peer pressure. You know go back to middle school and high school days, I mean you go to parties somebody brings it out you know, kids are kids. Kids are gonna try stuff. The problem is nowadays it's not just heroin being cut with anything, now its heroin being cut with another potent drug” (Interview 12).

Isolation

While the party scene was identified by many as a place where opioids were used, two participants described cases in which opioids were used in solitude. A legal professional stated, “The heroin scene is not like the party scene. You're going to see that with cocaine, and crack you know they’re bringing it to the party everybody's coming up, they’re having fun. Heroin more or less you're going to find it’s that one person shooting up with a drug dealer nearby and then they go home. They’re either going to shoot up or snort it or something like that...And you know they feel the effects. They sit down, they enjoy it, they pass out something like that. So that’s the opposite of the uppers” (Interview 12). The other interviewee, a lobster fisher from Machias referenced the highly publicized case of Sam Stevens a lobster fisher who overdosed in his car and also commented on a relative who did the same (Interview 6).

Availability and Access

The ability to purchase and access drugs was a major theme that emerged as a driver for drug use in the lobster fishing community. Seven major sub themes surfaced including: (1)

Making Money; (2) Youth and Money; (3) Seasonal Nature; (4) Boom or Bust; (5) Availability of Opioids (6) Drug Dealers; (7) Lack of Law Enforcement.

Making Money

Nineteen out of 20 interviewees discussed that the lobstering industry is lucrative. One community stakeholder explained how the industry is on the rise stating, “I can’t overemphasize the amount of money coming in from lobsters” (Interview 9) and he continued, describing that there’s more money coming in from fishing than there used to be. Of the 18 that referenced that there is money in lobster fishing 12 suggested that making this sort of money was a contributing factor for drug use without being asked directly. Three others who were asked if money was a factor, also said that it was definitely a driver for drug use. A lobster fisher from Deer Isle-Stonington described the pattern he observed between money and drugs. “Yeah, I mean I don’t really see it as much anymore, but we had one year where we were doing really good and wherever there’s money there’s drugs. Usually I mean that’s it, you see it in cities you know what I mean but instead of selling drugs to make drug money to buy drugs, you’re selling lobsters to get drug money to buy drugs” (Interview 18). Interviewees also suggested that the amount of money that you can make while fishing makes the possibility of maintaining an opioid habit financially feasible. A community stakeholder explained,

Especially for younger kids they earn a lot of money at a very really early age so they can afford it. There are kids that are walking around with hundreds of dollars in cash in their pockets all summer long. So I think that’s another sort of barrier that kids don’t have you know, if you’re working at McDonalds for 10 dollars an hour you can’t afford to buy heroin in the same way. So there’s this weird thing where they actually can afford it and the financial burden is not as much of a barrier as it sometimes is in other places (Interview 15).

Another interviewee also compared lobster fishers to other jobs, “So I’ve seen the lobstermen down our way who are doing it primarily, who are doing a lot of it. But I think that’s because

their income is way higher than somebody who say works at the Irving or McDonalds. I mean they're doing it too, but they are doing it a lot more" (Interview 12).

Youth and Money

Thirteen interviewees commented that youth started fishing right out of high school and oftentimes even younger. One fisher discussed his own experience, "I am 45 years old and I've been a lobsterman and everything since I was 15" (Interview 11). Another interviewee thought about how long he's been fishing when asked, "Maybe since I was 12 years old with my father. It's been five years of my own boat" (Interview 14).

Six of the 13 interviewees discussed the implications of making so much money at such a young age and how it allowed for the possibility of purchasing drugs among other things (trucks and ATVs). One interviewee stated, "These kids who graduated high school or younger, in their early twenties and they get into this party scene and stuff because when they are lobstering on the boat they're making a ton of money" (Interview 12). Another community stakeholder/educator from Deer Isle-Stonington elaborated about the difficulty of making so much money at a young age,

Yeah ... kids who already owned 30-32 foot boats. They were on their fifth boat since they were 7 years old and they were buying houses right out of high school you know and again, is it good for the industry to be making all that money, of course it is. Is it good for an 18 year old kid to all of a sudden find himself with \$200,000 of net income? I don't know... look at athletes who you know, are the first round draft pick when they're 19 years old. There's not a great track record with them, because they have all this money and not a lot of responsibility not a lot of oversight. You're an adult now do your thing. And at the end of the day you're 19 years old... (Interview 16).

Seasonal Nature

The seasonal nature of the lobstering industry was commented on by five participants as a factor in drug use and how the majority of a lobster person's money is made in a short time span. One interviewee commented, "There's lots of money made in a short amount of time" (Interview 9). Three of five interviewees suggested that this seasonal nature of the industry lends itself to

drugs. A fisher gave the example of how making this much money so quickly could lead to spending on drugs, “So this week here I just made \$8,000. A lot of people it takes a month or two months to make that, but this was just a week, and what am I going to do with that, some guys who are young might go buy a four wheeler, and then there's some that are I'm going to go hang out with these guys and we're going to party, you know. Again I don't know how much heroin costs or coke, I don't know what the price of stuff is and everything and then you say I have all this money. I don't have to work it goes back to the discipline” (Interview 6). A legal professional noticed changing trends in drug use with the seasons and periods of fishing labor. “... summertime yeah we're busier. A lot more activity going on, a lot more sales, but we are busier. We are doing more work so you know more money flow more proceeds for drug sales. The price can actually fluctuate. In the summertime the price per gram for heroin or any other drug will go up and it all fluctuates and you'll go to the town of Bangor, Maine and you'll probably go buy a gram of heroin for 180-200 bucks and you go down to a coastal area and its double” (Interview 12).

While many fishers make the majority of their income in the late summer and fall, two interviewees, one from the Machias and one from Deer Isle-Stonington, also offered that many boats fish year round. The lobster fisher from Deer Isle-Stonington stated, “The largest fishing fleets in Maine and we have a very active offshore fleet so we have a year round fishery here. There are some seasonal boats but we have quite a few boats that are year round operations” (Interview 10).

Boom or Bust

In addition to making the majority of their money in the half of the year, the oscillating boom or bust nature of lobstering- where there will be years of phenomenal landing and years of less than ideal catches- was also commented on by six interviewees. One fisher from the Machias

area discussed how he conveyed this information to his sons. He explained, “As I’m teaching my sons who are 20 and 21, you know you take the good with the bad it just is part of it. After 38 years I’ve seen that” (Interview 6). Interviewees also commented that the past few years have been uncharacteristically lucrative. One lobster fisher commented on how the younger generation is not prepared for the ‘bust’ years. He stated, “You know, there are some bad times...and some guys that have been in it haven’t seen those yet, you know they only know the good things” (Interview 4). This upward trend, though positive for the industry, could be one contributing factor to opioid use in the industry. One interviewee speculated,

You know until the last 20 years fishing has been very up and down historically. There has boom years and bust years and you know, if you talk to the older generation of fishermen they talk about probably spending more of their life poor than wealthy and so there's kind of this community that’s impacted by and informed by poverty....[and] in that last 20 years there’s an unbelievable amount of money in it and so I think that’s gotta be a factor you know, a community that’s sort of rooted in generational poverty all of sudden getting a lot of money to me is like the worst possible combination (Interview 16).

He continued describing how the attitudes that often surround generational poverty can also encourage drug use, “... no sense saving it cause it’s gonna be gone anyway so have fun. Or it’s more important to take care of my family with the money than to think about long term. You know, there's no delayed gratification and so you couple that with you know, money and access to these kind of drugs that’s a pretty bad combination” (Interview 16). Another community stakeholder talked about the rhythm of the industry and how it promotes drug use. “So I think that gets into the financial literacy piece but there is also this boom or bust thing that they expect that is just part of the flow of lobstering, that there’s this intense time, make hay while the sun shines and then there are just these times that there isn't any. And both of them sort of support substance use. ‘Oh I’m doing so well I’m making so much money I’m going to celebrate’ or

‘Christ, I’m broke I gotta get high.’ You know, either way getting high is the answer” (Interview 15).

Availability of Opioids

Ten interviewees commented on how readily available opioids are in the area. One interviewee described how easy it is to obtain opioids drugs in her community, possibly even easier for minors to obtain than alcohol.

So, as I said I worked with students and you know they tell me if I needed to go out and score some heroin right now in [a coastal Maine island] they could be back in half an hour no problem. That it’s just everywhere. So that access. So of course there’s going to be increased use when they’re easily and readily available. In a lot of ways more available to students than alcohol because alcohol you actually have to go to the store you have to have an ID (Interview 15).

Another interviewee, when asked if it is easy for people to find drugs or to buy them responded, “I mean I don’t really know, like I said people are finding needles on the side of the road, I mean that’s kind of a sure sign that it’s easy to get to. I mean I really think if I wanted to I mean I could probably find it, I mean I could probably go and buy drugs tomorrow if I wanted to” (Interview 18). Another interviewee commented that the utter availability of opioids facilitates the accessibility of opioid use, “When the alcohol stopped working or when the pot stopped working heroin and other opioids were very accessible and affordable and becoming an accepted part of the culture” (Interview 16).

Of the ten interviewees that commented on the availability of drugs, four described their social circles, outside of the party scene, as a method through which they gained access to drugs. For example, one recovering addict and lobster captain discussed, “You know and I know a lot of people, I know enough people, that I never went without, I mean I never went without. I always made sure I had them[drugs].” Another community stakeholder from Deer Isle-Stonington said, “So one person gets a prescription and they share em. Or it just opens the door

to the problem spreading I think” (Interview 8). One medical professional described that the source of drugs is usually close to home, “But very often the source of drugs is a friend or a relative and I've actually had parents start their kids on drugs so it's amazing to hear these stories...” (Interview 19).

Drug Dealers

Eight interviewees discussed drug dealers’ presence as a factor for opioid use in their communities. Interviewees commented that drug dealers were attracted to their communities for a variety of reasons. One interviewee explained how drug dealers are aware of the money that fishers make, “So again you know, the problem in our coastal area is too much money. The fishermen make a lot of money and people know that from out of state so they come up and they’re making good money and unfortunately the stuff they're bringing up nobody knows what’s in it and it's killing people so, you know” (Interview 12). An interviewee discussed the lack of drug enforcement as well as the ability to increase the price of drugs, “Also, Maine is a fertile ground for people out of state or even in state to sell drugs because there’s less law enforcement. Also there's money here. It’s fertile ground. The mark up is high as well. Heroin that may be \$20 in NY is \$100 in Maine”(Interview 9).

Further, six out of the eight interviewees who commented on drug dealers mentioned that they were from out of state, namely from Connecticut, New York, and Massachusetts. Another discussed more specifically how the drugs are distributed. “The problem down our way is just there's so much money around we have people from out of state from New York, Connecticut, Mass, coming up and... and they're bringing large quantities of heroin and crack cocaine and they are selling it and they’re buying and buying and buying it up and a lot of places on the coast up our way it’s remote so it’s there. There's access to it, there's a ton of it, they have tons of money you know, and they’re partying, and all that. You put that together and it’s a bad combination”

(Interview 12). One interviewee described how out of state drug dealers drive up I-95. “You know, there's always going to be someone bringing it up I-95 to here because they can make so much money doing so because its cheaper in the big cities. They can mark it way up. They create money driving up 95 and once it's in the community it seems like someone's going to try it”

(Interview 14).

Lack of Law Enforcement

Of four participants who were asked whether there was enough law enforcement, three said that there was a lack a of law enforcement. Two additional interviewees spoke of a lack of police presence on their own. When asked about law enforcement in town, one community member stated,

None, in Stonington. The town of Stonington has a 40 hour a week contract with the sheriff's department and patrols in Stonington and the town of Deer Isle doesn't have any so then they're kind of covered by Hancock county and the state police and so you know, the state policeman might be up in Otis cause there's only one for all of Hancock county, and then you might have a sheriff deputy in Brooksville you know, half an hour a way and another one in Elseworth so it's quite a ways away. And then come across the bridge there's a radio frequency that's kind of dedicated to tracking where the cop is when they come on the island. Oh so now its sunset so all the activity shifts over here oh they're down in Stonington so everything shifts up here you know so it's not, it's very marginal (Interview 16).

An interviewee from Machias commented on how limited funding prevents more law enforcement from being hired. He states, “There are only two roads in and out of Machias. Route 9 and Route 1. And you know if they would just... I know it's a money thing that this area doesn't have the money. But if they would just make the effort to do like road checks, you know?” (Interview 2).

Manual Labor

The physicality of lobster fishing was presented as a major cause for the initiation of opioids among lobster fishers. Five sub themes emerged including: (1) Aches, Pains and Injury; (2) Prescription Opioids (3) Danger; (4) Performance Enhancing; and (5) Withdrawals

Aches, Pains and Injury

Fifteen interviewees discussed the physicality of lobster fishing. Interviewees described the wear and tear that this sort of manual labor has on one's body. "Yeah, I would say the physical wear and tear in the business is tough. I mean you throw around sixty pound traps and are trying to work 12 hours 14 hours. I guess it takes a beating on people" (Interview 14). Another described that "lobstering is really hard physical labor so you need to find somebody fit and pretty rugged to handle it and work in rough seas..." (Interview 7). A healthcare professional made a comparison to help explain the physical toll that lobstering has on a person,

And as I talk to their patients and I understand their issues it's obviously a very physically taxing job, very stressful. It's physically demanding, long hours and often dangerous conditions and injuries. Try and compare them to professional football players who have four or five months where they have to be at the peak of their game that's their season. So their season you know, they want to be you know, working long hours hauling as much as they can, making as much money as they can in a short window of time where they can actually go out and haul (Interview 19).

Of the 15 interviewees who discussed the physical nature of the job, 14 commented on how this is a driver for opioid use. One interviewee explained the connection between manual labor jobs and prescription opioids, "But I do think there's a very strong correlation between the prescription opioid market and what ended up being basically the heroin trade. And the closer you get to the working community, the more people that are going to have back problems shoulder problems, stuff along that line. And they end up getting prescribed these prescription drugs and that can have a horrible snowballing effect" (Interview 20). Another interviewee made sense of opioid use, "And if you feel like crap everyday coming off the boat because you're taking a pounding for 15 years, opioids are pain killers. Like you know, I see it" (Interview 16). Another interviewee explained, "There's a perception that these industries are demanding manual labor and various types of bodily or nagging injuries or outright injuries that comes into play when people start to use or whatever" (Interview 7).

Along with the general aches and pains that come with manual labor, back pain was specifically commented on as a common issue among fishers. Eleven participants specifically pointed to backs as a site of injury. Another interviewee pointed out that though lobster fishing was taxing on his back, “And it really is hard on your back. I mean you’re lifting 75 pound traps all day long. But I don’t want to be misrepresented. You don’t need drugs to lobster fish. Guys do it all the time but I’m just saying, sometimes it’s the work injury that sends you to the drugs, you know” (Interview 2). Another stated, “...also, there's a lot of manual labor here so people legitimately have probably more orthopedic pain and back pain” (Interview 5). Yet another interviewee stated, “There’s a physical tear on yourself so that’s part of it too. Because if you're sore and your back’s giving out and you wanna go the next day, maybe that’s part of it. Maybe that’s what they want to do. And I certainly haven’t tried so I can't say” (Interview 14).

Prescription Opioids

Eleven interviewees discussed how receiving prescription drugs from a doctor led to opioid addiction. When asked if they think that injuries are common in the fishing industry, one lobster fisher offered, “I think that there's probably an increased rate of people that are prescribed legal opiates for back injuries and for knee injuries you know, shoulder injuries. There are people who get injured and do get prescribed opiates. And that may be a path to addiction” (Interview 10). Another interviewee described the historical context, “...the oxycodone and the whole pharmacy thing in the 90’s and then the heroin. And how you know people who have been legitimately prescribed oxy for injuries which fishermen have, for you know chronic health. You know, back and muscle and all kinds of physical issues for which oxy was at one time a legitimate medical intervention but use of oxy sort of really paves the way for the issue of heroin use and switch over into being addicted” (Interview 15).

Fourteen interviewees discussed the transfer from prescription painkillers to injection drugs. One interviewee explained, “And a doctor’s prescriptions are where it starts for a lot of people. That’s where it started, they go to the doctor, they get a prescription of a vicodin or percocets and then they keep handing them out and before they know it them don’t work so then they’re starting to find bigger badder drugs... And that’s where anybody I know that’s hooked on heroin has started - with prescription opioids” (Interview 3). Another describes the swiftness of addiction on the body, “You know, people have medical issues you know, back pain or something like that and they get a prescription medication to help their pain and when they get off of it the doctor cuts them off and now they’re forced, they can’t get prescriptions, so now they’re forced to find another option. And those other options could be heroin” (Interview 12). Similarly, interviewees mentioned the tightening of prescribing laws as a catalyst for the jump from pills to injection drugs. One explained, “Then there was a clamp down you know. It was you know, it was harder to get. And then you know, all of a sudden heroin moved in and it’s so easy to get and it’s so cheap you know...I mean some of these guys would be way better off to be on oxycontin at least it wouldn’t have fentanyl in it” (Interview 4).

When considering prescription drug use, four interviewees used the word “legitimate” to describe the use of opioids to treat an injury. One interviewee used this language to discuss how he sees young men as a population that is likely to use, “They’re prone to take risks so... you know. They’re also more likely to get injured and that and have a legitimate need or maybe a legitimate need for painkillers. Which opens the door to the problem” (Interview 8).

Danger

Not only is lobster fishing labor intensive but also seven interviewees described it as dangerous. One interviewee described this aspect of the job, “Yeah, it’s like part of the job. But you know it’s a dangerous job and you know there have been people who have been hurt bad you

know. There's been people who have gone overboard and not come back and that kind of thing. But yes it is you know, there are definitely injuries” (Interview 4). Some interviewees described how this dangerous environment influences one's mindset around drug use. One community stakeholder stated, “They’re risking their life everyday going out on the water, so they grow up really fast in some ways and part of that growing up really fast I think is this sort of acceptance and expectation that substances will be part of the mix” (Interview 15). Another speculated about how this dangerous work environment contributes to drug use,

And you know, there's all kinds of psychology around why people fall into substance use and its people living on the edge. And these people live on the edge there out there on the water. They’re living on the edge there fighting with death all the time. They could get tangled in a rope pulled over with loaded traps and drown. So it's no wonder they get on land and stick around on the couch. Watching tv is boring. They notoriously have fast cars and pickup trucks and it's not surprising that they think they could be a functional drug user. Cause you can do it, it's possible. But the trouble is it hits them and then they use too much and die (Interview 13).

Performance Enhancing

Seven interviewees commented on opioids’ pain numbing effects on the body and therefore their ability to boost a manual laborer’s productivity. A community stakeholder described that, “Someone who's taking drugs also works harder and faster” (Interview 9). One interviewee and recovering addict described opioids’ beneficial properties, “Another part of it is it’s hard work. You make good money and the opiates help. When I first had them I was like jeeze, you know it helps you feel good and then you can work harder” (Interview 11). Similarly another recovering addict discussed his ability to work longer with the help of opioids. “Yeah, so when you do drugs you can perform more. You know. That’s what I've found when I do drugs I can work longer. I can work harder. And then you gotta push longer to make more money to make more drugs (Interview 3).

Withdrawals

Seven interviewees commented on the withdrawal symptoms that occur when an opioid user does not get their fix. One legal professional described how swiftly one can get hooked. “Once you use it for a day or two your body’s just, it's going to be sick, you know? The throwing up is the worst possible feeling if you’ve ever been sick. That’s what they feel like everyday” (Interview 12). Five of the seven interviewees discussed how opioid users often had an intense focus on seeking drugs as to prevent getting dope sick [experiencing withdrawals]. One interviewee explained that “as soon as they get addicted their only focus is getting high not what's going on around them” (Interview 17). Another interviewee discussed, “And heroin addicts if they can’t get heroin they make bad employees, bad fishermen” (Interview 2).

Broader Community Factors

While many industry specific themes emerged such as *Work Environment, Limited Social and Economic Options, Availability and Access* and *Manual Labor*, interviewees also described broader community-level factors as significant. Many interviewees described a multilayered picture of the root causes of opioid use in their communities. They often mentioned the joint forces of: poverty; mental health issues; abuse/neglect; generational use of substances; and rugged individualism as creating an environment where using drugs is not unlikely. These factors were distilled into four sub-themes including: (1) Generational Community Risk Factors (2) Generational Fishing (3) Small Maine Communities (4) Mainer Identity.

Generational Community Risk Factors

Eight interviewees discussed environmental drivers that contributed to opioid use. Though the specifics of their comments varied, they were similar in that they often discussed chaotic and harmful social environments. A health care professional described the risk factors for drug use of the people that he treats, many of which are environmental in nature. He stated,

So, there are some genetic factors that are hard to measure. But there are some studies that suggest genetic factors, certainly for alcoholism and probably for other kinds of addictions and you know, we see it across generations. So, you know, it begs the question of if it's genetic versus environmental. If they're just exposed to other people using. Very often these families, there's low education, lots of mental illness and people who lack insurance. Also people who avoid getting medical or behavioral healthcare and there's a lot of abuse and neglect. And for women there are very high rates of sexual abuse of the women that I see. So, very often a lot of it is sort of just traumas of life and how much mental illness would there be without the trauma and the negative environment in which they live. And on top of that there's bipolar disorder, there's anxiety disorder, there's ADHD all these things are all intertwined and it's hard to separate out, but they all seem to be at play in the fishing community. I see all of it for most of them, they all seem to have these risk factors (Interview 19).

Others also noted the effects of generational mental health issues, trauma and substance abuse throughout their coastal community. Another community stakeholder commented on people turning to drugs as a way to cope with mental illness,

But we were noticing these kids coming to us with increasing mental health needs who at the high school and junior high level seemed to be self medicating with alcohol with marijuana occasionally with pills occasionally with you know hard drugs. But what we could really see was this trajectory of young adults who when the alcohol stopped working or when the pot stopped working heroin and other opioids were very accessible and affordable and becoming an accepted part of the culture (Interview 16).

Further, a community stakeholder described the impact of the opioid crisis across the community, suggesting the cyclical forces at play when thinking about communities rooted in generational substance abuse,

[What] I've been hearing from school teachers and administrators is how much worse the behaviors are of students especially young students and just how challenging the lives of these families are and a lot of that goes to the opioid crisis. And all of the things that reflect from that, people being in jail people being in rehab, people just being missing whether that's because they're using or trying to get better. And then just the chaos that often accompanies addiction is really, really having an impact on families and on kids. And especially they're seeing that in the behaviors of young children (Interview 15).

The community stakeholder later continued describing acceptance of substance abuse in some coastal communities,

And then there's this issue sort of with permissibility. I don't really think that the island and coastal communities are sort of permissive of encouraging opioid use, but there is a definite acceptance of substance use, substance abuse addiction. It's just how it is. It's just the way we are. This is just how these communities work. This is how our family is. People have this sort of resignation to addiction as just sort of a part of life. So that's another big piece of it (Interview 15).

Generational Fishing

Nine interviewees commented on the generational nature of lobster fishing. One lobster fisher commented, "I'm a third generation lobsterman and both my parents have passed away now. My grandfather was a fisherman and my father was a fisherman and they're both gone too" (Interview 11). One discussed how he's teaching his sons to fish, and another interviewee commented how most fishers come from lobstering families, and the tight social bond that is created. He stated, "We are a pretty tight group. Everyone's been great to me since I started and that goes back to you know, starting with my father and working up that way in my family. If you just came out of the blue I don't know how it'd go but for the most part we're a pretty good town that way" (Interview 14).

Three interviewees discussed that some behaviors such as the acceptance of substance abuse have become part of the lobster fishing culture because of the generational nature of the industry. One interviewee commented,

From my perspective, one of the really cool things on the islands and in the coastal communities is this intergenerational thing where there's this wonderful, like you learn from your grandfather and you all hang out in the shop. You're a little kid and you're taking in all this information that's sort of passed down but you're also in the shop and people are smoking cigarettes and they're smoking pot and they're drinking beer and now they're also you know, using opioids. And so there's a real lack of understanding of how much you need to protect kids from that. So they just grow up seeing it and I think that makes it much more likely that they start using younger and it's really coupled with this really wonderful aspect of this intergenerational thing (Interview 15).

Another interviewee discussed how substance abuse has historically been a part of the lobster fishing industry,

You know, the community like many rural isolated resource-based communities has sort of always had these addiction issues - either below the surface or above it. You know, towns that sell t-shirts that say things like you know, a drinking town with a little fishing problem. You know, the alcohol piece has always been above board and part of the culture but there's marijuana, and the perception is changing nationally but there's certainly a lot of usage of that in many communities (Interview 16).

One healthcare professional explained, "Other than sort of hands on experience with hundreds of people over ten years talking and listening it's clear that it's very frequently multi-generational. You know, it goes back three generations probably going back even further, in the past it was probably more alcohol and now there are opiates, cocaine and other things that are freely available. Those are now what we're seeing" (Interview 19).

Seven participants (two who were asked directly and five who brought it up on their own) commented on alcohol use as being part of the fishing culture, and something that is often more accepted than opioid use. One interviewee commented, "You know, drinking is definitely accepted. You know, drinking and getting drunk which there are many people who do that, 3, 4, 5 beers every night..." (Interview 6).

Small Maine Communities

Five interviewees discussed how their communities as a whole are tight knit. One discussed "We're a very close knit community and there is a lot of support here for people to get better and then come back into the industry..." (Interview 10). Of the five, three described the closeness of lobstering communities themselves. One community stakeholder speculated, "But the community of lobstermen they're kind of like tribes and I think there's just reputations and things that are said and things that are known about people and individuals and their behaviors" (Interview 13). A lobster fisher from Boothbay notes that when someone is using drugs others in the community know about it. He states, "Usually the industry starts murmuring about it. Other fishermen they know, cause it's a small community they know each other well, even if they don't

know each other personally everybody knows who the other person is an I mean that not all lobstermen across the entire state but community to community it's pretty true" (Interview 20).

Two others also noted the nosy nature of small town communities. Specifically, they described the tension of keeping things private in a community where everyone knows everything about you. One interviewee described,

I think it does stem from just this very proud and private, on some level, sort of way that a lot of people are. And then you know, just like in other communities when there is abuse, when there is neglect, when there is, you know, really inappropriate behavior, people try to cover it up and for their own preservation, for the sake of their family, for their reputation certainly. In these tiny communities, you are so and so's son you are so and so's daughter, don't be like your dad, don't be like your mom. There's so much desire for privacy but there's so much sort of shared knowledge that may or may not be accurate cause everybody knows everybody. Cause everybody thinks they know everybody's business a lot of times they do, but not always (Interview 15).

Another community stakeholder echoed this notion, "But small towns like Deer Isle-Stonington, everybody knows everybody, so if someone has an overdose and survives the whole community's going to know about it and I think it's just like, it's a weird family thing because you know you don't talk about a cousin who has a chronic problem. I don't know. It's part of the social norms in some parts of Maine to just stoically go about business and pretend you didn't see that ugly thing" (Interview 13).

Mainer Identity

The impact of small fishing communities was further reinforced by what many referred to as the "Mainer Identity." Eight interviewees (two of which were asked directly if one's Maine identity impacted drug use and five of which commented of their own volition) discussed that there is a culture of stoicism and ruggedness among Mainers and lobster fishers. One interviewee described that "Deer Isle has always been a hard scrabble place." He also noted a level of "rugged individualism" (Interview 9). Another described the independent nature of some fishers, "So I would say that on a large scale representation of the community ... they're just hard-

working people. They go out, they fish they, want to be left alone, they want to do their own thing and they do it respectfully of the people around them” (Interview 20). Interviewees also noted how these qualities often made seeking treatment or asking for help difficult. One interviewee explained, “There's also ... this intense sense of independence and people really do have to be able to take care of themselves and, um, they don't necessarily like asking for help” (Interview 15). When asked what the cultural acceptance of getting help was like, one interviewee explained, “Its pretty low, you know again (laughs) in resource-based economies you know, tough strong men tend not to have, don't think that they have feelings to talk about” (Interview 16).

After collating the thoughts and opinions of interviewees it is clear that there are a variety of driving factors for opioid use within the lobster fishing community. The following chapter will focus on examining the ways that communities are combating opioid use both in terms of treatment and prevention.

Results: Part II

This chapter serves as a continuation of the results section and includes data that seek to answer the question: What are effective opioid prevention and recovery techniques for lobster fishing communities? Results Part II begins by discussing the treatment options that exist within communities. Next, this chapter discusses the barriers to treatment and prevention, and finally, it describes the solutions and prevention mechanisms proposed by interviewees.

Treatment

There were a variety of existing treatment mechanisms both formal and informal in nature, that interviewees discussed. These were broken down into four themes as follows: (1) *Treatment Options*; (2) *Medically Assisted Treatment*; (3) *Return to Work*; and (4) *Community Support*.

Treatment Options

Nine interviewees discussed various detox and addiction recovery programs as ways to treat opioid addiction. There were a variety of models that were mentioned including: in-patient short-term detox; outpatient detox programs (hospitals, live-in detox and treatment facilities often referred to as halfway houses); live-in faith based rehabilitation; outpatient medically assisted treatment (suboxone, methadone); and 12-step programs. One health care professional discussed how healthcare providers have been working to establish a diversity of treatment options for those struggling with Substance Abuse Disorder. She states, “So, I think a lot of these agencies and providers are trying to think outside the box and try and figure out what you know, like everybody has a role everybody and needs to step up and I think we’re all trying to figure out how to give multiple choices and choice of entry into treatment” (Interview 5).

Medically Assisted Treatment

When asked about the types of treatment available to people in the community who suffered from Opioid Use Disorder, 7 interviewees discussed the use of Suboxone and other medically assisted treatments that interrupt the cycle of chemical dependence on opioids. The alternative method is going “cold turkey” or not using other drugs to assist in the process of detox. Among those who discussed suboxone there were varying perspectives about the drug’s effectiveness. One lobster fisher described how a drug treatment worked for him, “And then I started [an] outpatient program with suboxone. In my mind [it’s] a lifesaver, you know its really, it works, you know? You can't abuse it either you know, a lot of people say it’s like a crutch you know but, it bridges the gap though” (Interview 11). However a legal professional expresses his wariness of the drug, “But a lot of times they replace the drugs for another drug and you get addicted to doing this other stuff and then you sell it on the street and buy illegal Suboxone and stuff like that and Methadone. So it’s a cycle it’s a never ending battle” (Interview 12). A healthcare professional described the necessity to use drugs in conjunction with therapy. He stated,

Because the people who are coming to me I'm treating and giving medication, it doesn't work as well as it's supposed to because what this medicine is supposed to do is give this person stability so they're not craving drugs or using drugs as much. But very often they're addicted to behaviors, to things in the lying the cheating the deception the negative behaviors - they are still there unless they're working on the 1-12 step programs or going in to group therapy or something to really heal their behavioral problems. But anyway, the people I see are stable even though they're not (Interview 19).

Three interviewees discussed Narcan, a drug that reverses the effects of opioids. One interviewee mentioned that because of his proximity to working with the lobstering community he feels that he should be trained in Narcan administration (Interview 13). Another interviewee discussed how quickly ambulances in Stonington go through Narcan, demonstrating the prevalence of opioid overdoses there, “You know like the town manager talked about people

ODing in the public restrooms down on the pier. The ambulance is running like almost exclusively Narcan overdose runs now” (Interview 16).

Return To Work

Five interviewees discussed community support for fishers who had gone through the recovery process and were returning to the industry. One lobster fisher explained, “More generally I'd say we have a really close knit community, so people's families are there for them, their friends are there for them, there's a stigma that's attached to being an opioid addict but I like to think that overall we're supportive of people that try to get help. Imagining that people come back from the dark side and get back into fishing and being successful. So there are kind of you know, opportunities here to return from addiction” (Interview 10). A law enforcement agent discussed the considerations made when revoking someone's lobster license,

You know we're not going to take someone's livelihood away through a suspension if it seems like they're on the right path and doing what they can do... going to treatment programs and stuff like Suboxone... stuff like that, trying to clean themselves up to get back to a reputable place in life really. And we are fully aware that means to make a living is a huge factor in being able to keep yourself clean. So if that's where the fisherman is coming from and that's what they're working toward then that is definitely something that is taken into consideration as we move forward (Interview 20).

Community Support

Five interviewees described how support from family friends and the community at large was critical in the treatment process. Two recovering addicts described the support they receive from their significant others. “I was obviously addicted to drugs you know, and I've tried everything so I decided to try this. I went to a detox in Portland um, my girlfriend goes to a church...and they reached out and found this place and I gave it a shot” (Interview 13). A healthcare professional discussed an at home detox program and the importance of a strong support system. “Patients come in with a family member or with a sponsor and if they have the willingness to detox, a safe place to do it and a strong support plan then we give them three

medicines to help get through the withdrawal symptoms” (Interview 5). Another community stakeholder recognized the existing support systems that are often in place in small town communities, and described the aim of breaking down the stigma around drug use utilizing these support systems for those in recovery,

One model that we have taken on in these communities when you're sick, when you have a baby, when someone dies. The support is phenomenal. Like nothing you can imagine. Just everybody supports you everybody brings you food. There's just this wonderful outpouring of care and support when you come home to an island or coastal community...[but] from being in rehab, nobody wants to talk to you, your old friends don't want to talk to you. Your old friends don't want to hire you. Everybody's scared you're going to steal from them, you know. So it's very very lonely for people when they come out of rehab and I think that's true everywhere so we're trying to be a little more like caserolly [i.e. bring them casseroles] about it and support people” (Interview 15).

Further, five interviewees discussed grassroots coalitions that were formed to combat opioid use in certain communities. One interviewee described, “And it's a rag tag group of community stakeholders that decided that they wanted to try to come together to do something to help. And one of the focus areas they have is to break down the judgement of people that are suffering from addiction and sort of to be a more supportive community” (Interview 15).

Another interviewee discussed a similar group, “Right, so after several months the exploration, I and others decided to start a coalition to start addressing these issues, because nobody else was going to if we didn't” (Interview 19). Another interviewee described the closeness of her community, “Just more generally I'd say we have a really close knit community, so people's families are there for them, their friends are there for them” (Interview 10).

Three interviewees also discussed support groups as a method that would work well for those who are struggling with addiction in the community. Two mentioned a twelve step program approach as useful. One interviewee discussed the program, “We meet for an hour and we you know, talk about how we were set free. People come and they talk about just what you're

saying. Hey, I'm struggling um, I need some help" (Interview 2). He continued by explaining how these meetings have expanded and are now offered every day of the week. Another interviewee commented on the difficulty for this sort of program to take off in his community. He stated,

They've been having trouble getting young people to these events. You know, like a 12 step process like an AA sort of thing. There's a stigma showing your face in a public place, you've got this weakness this vulnerability so they're trying to do a different approach - a peer to peer kind of thing. And get a few graduates so to speak who have recovered working with individuals in a more intimate way, less of a public way. That could work better (Interview 13).

Another interviewee who is a recovering addict discussed how he often meets with people struggling with addiction and acts as a mentor.

Barriers to Recovery and Prevention

Though many treatment options are in place in the coastal communities visited, interviewees discussed a plethora of barriers getting the care they needed as well as hurdles to prevent opioid use. These barriers were divided into eight sub themes: (1) *Access to Treatment: Geographic*; (2) *Access to Treatment: Affordability*; (3) *Efficacy of Drug Education*; (4) *Lack of Policy and Funding*; (5) *Inescapable Drug Culture*; (6) *Highly Addictive and Potent*; (7) *Stigma*; and (8) *Community Tolerance*. Table 4. Provides a breakdown of the most common barriers to treatment by study area. Because of the small population sizes from each study site, meaningful comparisons cannot be drawn. Instead this table provides a breakdown of the data by study area.

Table 4. Common barriers to treatment by study area

	Totals	Machias Area (N=6)	Deer Isle-Stonington Area (N=6)	Boothbay Area (N=5)	Coastal Communities (N=3)
Stigma	14	3	4	4	3
Access treatment: geographic	12	3	4	2	3
Efficacy of Drug Education	8	2	3	1	2
Access to Treatment: affordability	6	0	3	1	1
Lack of policy and funding	6	1	1	2	2

Access to Treatment: Geographic

Twelve interviewees noted the distance to travel to receive treatment was a barrier to recovery. One interviewee from Machias described the rural nature of his community, “And the thing is here you are far away from basic services. You know... the nearest stoplight is um, this way (points) would be in Ellsworth which is 80 miles. And the nearest stoplight in this direction is um, Calais, and that’s um, 25 miles” (Interview 1). Another interviewee described that Maine as a whole has many isolated communities that are far from resources, “That’s a Maine problem in general that even here, we have more population Downeast but we’re still pretty spread out so a lot of times you have to go to the hospital for something and you’re driving 45 minutes. So it’s probably the case with that I’d assume. Treatment centers and stuff they’re probably in Brunswick. Or it’s gonna be in Augusta, you know. We’re just spread out that way” (Interview 14). A community stakeholder further explained, “So treatment is a huge issue and there is not a lot of access and most of the treatment facilities are in sort of the population areas of Portland, Lewiston, Bangor. So for people in these really isolated rural communities it’s really hard. You have to travel to get to it” (Interview 15).

Five of the 12 interviewees also observed that not only physical distance is a problem but also there are a lack of treatment options. As a community stakeholder from Deer Isle-Stonington noted, Maine has many treatment deserts, or places that lack available treatment for its community stakeholders (Interview 9). A healthcare professional described this conundrum, “I came to realize I was the only doctor in [his area]...treating people for drug addiction other than the Methadone clinics. Kind of demonstrating how scarce help is for anybody in need.” He later continued, “In any case, people will travel two hours each way once a month to meet with me because I’m one of the few who will prescribe Subutex” (Interview 19).

Access to Treatment: Affordability

Six interviewees discussed how expensive medical care is as a barrier to seeking and receiving treatment. One interviewee described the challenge of managing the expenses of getting treatment while simultaneously working,

There are treatment centers and people want people to get into them but if you don’t want to do it yourself a lot of times you have to check yourself in and then when you do that... it’s a number of days you don’t just go in an hour each day. You check yourself right in and it takes you away from work, and people think well now people are going to know I’m a heroin addict cause I’m in a treatment center. Those things are out there. You’re gonna want to do it is the problem, cause the thing is unless they are being forced to do it people aren’t going to check themselves in” (Interview 12).

Another community stakeholder recognized how expensive treatment is, “A big problem for people who want to get help is that they can’t afford treatment” (Interview 9). A healthcare professional elaborated discussing the lack of insurance amongst the people he treats,

Ninety percent of my patients don’t have any insurance so they have to pay out of pocket for everything and medication can be expensive. Suboxone is about ten dollars a dose very often it will cost \$500 a month just for medication for people who have poorly paying jobs and no insurance. So, I’m willing to prescribe something called Subutex which is the same but without Naloxone in it and there’s no need for that. There’s kind of a hoax a bit perpetuated by the manufacturer that it’s a safer drug with the Naloxone in it, but its three times as expensive so I go with the Subutex and so most doctors won’t do that because they’re also convinced that by doing that they’re just encouraging people to misuse their medication. But that’s just not true. In any case, people will travel two hours

each way once a month to meet with me because I'm one of the few who will (Interview 19).

Efficacy of Drug Education

The most common barrier to prevention that interviewees suggested was that education only goes so far in terms of preventing youth drug use. There were eight interviewees who questioned the efficacy of drug education. One health care professional stated, "It seems like kids have had a lot of education, yet they still try that first snorting or injecting and its for some of them after once or twice that's it. You know, they're done, that's their path" (Interview 5).

Another healthcare professional explained drug education, using sex education as a comparison,

So, you know, a lot of prevention efforts are like it's all about education but there's sex education that a good analogy because most teenagers learn quickly through friends most likely where they get information from, about sex and birth control and all that but teens still get pregnant. They know that that's how you get pregnant but there's just no self-control. Now they stop in the heat of passion and say, oh do you have a condom? Or if you don't let's stop. Not we're going to keep going. The whole issue with drug addiction is not, oh you don't know about drugs or the dangers of drugs from each other or the media, but the problem is that the adolescent brain and development has a lot of passion and desires risk taking and poor judgement and poor self-control (Interview 19).

One community stakeholder commented on the difficulty of creating drug education curriculum that meets the needs of all students,

It's a really challenging thing to do with adolescents who maybe aren't ready for that message, who are sort of in that self-medication vein you know. They're doing it for a reason and there's something that they feel is missing or something that they want to numb out... so sometimes giving them that information it's either I'm not ready for it, I don't want to hear it or, oh wait, there's even more powerful stuff that could make me feel less? That was always one of our fears... (Interview 16).

Lack of Policy and Funding

Six interviewees mentioned the lack of policy and funding as a barrier to people getting the treatment that they need. One interviewee explained his frustration with the lack of funding put forth by his town when asked to help sponsor a coalition to combat opioid use. He stated, "So, it doesn't seem unrealistic to me to put a lot of money toward [combating the issue]. Right?"

Especially because if there was that much of another disease going around there would be that level of support I would imagine” (Interview 16). A healthcare professional reconciled with the sobering likelihood that the opioid epidemic will get worse before it gets better,

So I call it good news bad news. Bad news first is that it's affecting more and more people. The good news from that - the silver lining - is the more people that are affected perhaps we'll get some momentum in implementing solutions cause right now people who have resources are in control and they are so clueless that they're playing the victims. They don't understand that it's a disease” (Interview 19).

Another interviewee discussed how he wishes funding would be prioritized, “So, I don't know how to bring more of these kinds of facilities and resources to communities that are having a hard enough time just keeping their school lights on, you know? But if we spent some of the money we waste fighting the drug wars in Mexico just on community infrastructure we could make such a big difference” (Interview 13).

Inescapable Drug Culture

Three interviewees commented on the difficulty of recovering from drug addiction in their communities because of how small they are and the difficulty of escaping their peers that they previously used drugs with. One interviewee explained, “Like I said, there's not a lot of opportunity for career choices and when people are addicted they are usually friends with other addicts and when they get clean it seems like it's hard for them to leave their friends and find new friends because it's like, all such a small town” (Interview 5). Another interviewee noted this same issue,

One of the really big challenges that we found in Deer Isle-Stonington is that even if we drove to Bangor to the Methadone clinic or went to the medical center and got Suboxone they still lived in Stonington with the same people they had been hanging out with for twenty years. The same people they had gotten high with, it's not like there's a whole different peer group that you can all of a sudden associate with so you're stuck in the same circumstances and even if you're trying to get help there's nowhere to go (Interview 16).

Highly Addictive and Potent

Another barrier to treatment that five interviewees suggested was the highly addictive nature of opioids make them very easy to become dependent on and also very difficult to get off. One interviewee and former drug addict described the addictive nature of drugs, “Yeah, it's weird, and people are like why can't you just say no? Why can't you just stop? That's what my girlfriend was like, like why can't you just stop? You know... you've got to have them to move. Just to *move*” (Interview 11). A lobster fisher described that “I hear that it's just so hard to get clean now that everything's so much stronger and addictive” (Interview 4). Later, the fisher continued identifying the potency of fentanyl, “I mean some of these guys would be way better off to be on Oxycontin at least it wouldn't have fentanyl in it...” (Interview 4). Three additional interviewees discussed the dangerous effects of fentanyl. One stated, “And that's the other thing. The heroin isn't really heroin. It's cut with fentanyl and you don't know what you're doing. And that's what's killing my buddies is you know, you get dope that's heroin for a while and then all of a sudden you get some that's sliced with fentanyl and you do it and it's ten times stronger and poof, it's over” (Interview 3). A law enforcement officer explained, “People who are overdosing because of their tolerance right and the fact that people are bringing in fentanyl and cutting it so” He continues, “Well fentanyl is a type of morphine its basically 30-60 times more potent than heroin (Interview 12).

Stigma

Fourteen participants discussed the shame and stigma around drug use in their communities. Though many interviewees suggested that opioid use is part of the party scene, one legal professional suggested that often people are not actually open about their use. “And lots of times people don't want other people to know that they're doing it so they don't want to make it a big scene in front of everybody else” (Interview 12). Another interviewee remembered how

community stakeholders treated him as a drug user, “People knew that it was going on but they turned their back to it like it wasn’t going on. You know, like the store in my town was the meet and greet place and everybody knew it but they just turned their backs like we know what’s going on but let’s not go by that car, let’s go park it, it was weird” (Interview 3). Another interviewee when asked what the culture around opioids is, and if it is stigmatized or accepted responded, “I don’t know about accepted you know, it’s like you got a guy who’s around that probably is but you know jeeze, his father’s your friend or you know his mother you know? You grew up with him, you can’t just...you try to tolerate but you always got an eye on them too. You know, do I want that kid around?” (Interview 4).

Seven interviewees described the destructive nature of an opioid addiction on a community, specifically they referenced stealing. Two of the seven described the fear of opioid users stealing from them which feeds into the stigma around drug use. One interviewee stated, “Everybody’s scared you’re going to steal from them, you know?” (Interview 15).

Three interviewees commented on the way that the communities do not discuss opioid deaths in the newspaper. One stated, “Even the deaths that happened from opiates and heroin and stuff are often not reported as such” (Interview 13). Another interviewee explained, “...and you see it in the paper and usually if it’s somebody young you say oh what’s up with that? It says ‘died unexpectedly’ and you hear downtown or something, oh that was the case, that it’s usually drugs” (Interview 14).

Stigma was also expressed as huge barrier for getting treated. One interviewee discussed “That drug use is socially stigmatized... it’s hard for people to ‘come out of the closet’ in this community. For example, in another mainland town there are five calls a day for Suboxone treatment however on the island there are always open spots for treatment” (Interview 9).

Another interviewee echoed this sentiment stating, “They’ve been having trouble getting young people to these events. You know, like a 12-step process like an AA sort of thing there is a stigma showing your face in a public place, you’ve got this weakness this vulnerability” (Interview 13). Another interviewee talked about the difficulty of getting community stakeholders more broadly on board with providing treatment to those struggling with addiction, “You know if someone wants to put a facility with six recovery beds in Stonington you know, how do you keep all the neighbors from fighting it because they don’t want it next to their house? Like, I don’t want drug addicts living next to me. Well, they already are you just don’t know that they are detoxing in their parents’ basement right now. You don’t know that they are stealing from your other neighbor to pay for it. So I think destigmatizing that there’s a problem is important” (Interview 16). A healthcare professional explained what he terms the “conspiracy of silence.” He stated, “It’s a constant struggle to get people to acknowledge the problem is real. Only a small percentage of the population is really on fire. They believe it, they know people are desperate, not only people who are addicted but family members and community stakeholders. When they’ve seen it and what it does to other people they are highly motivated to do something but unfortunately they’re still quite a small minority of the population” (Interview 19).

Community Tolerance

Though interviewees often suggested that there is no tolerance of opioid use within the lobstering community, there was simultaneously noted a lack of action to address the opioid crisis. When asked if their communities accepted opioid use seven interviewees out of nine said that opioid use was not accepted. Of the two that responded alternatively, one was a recovering addict who said that it was accepted in his circle. The other did not provide a response. After stating that opioid use wasn't accepted in their community, some interviewees suggested that there was public outcry to address the issue, others suggested a sense of stigma and still others

suggested a sense of community apathy. One community stakeholder noted how the community wanted to take steps to address the issue and described a community wide meeting about opioid use, “And at that meeting there was a great deal of outrage from hundreds of community stakeholders who felt like the community was not responding to the need” (Interview 19).

Another community stakeholder described both a sense of stigma as well as public outrage, “I hear from patients and families that there's a lot of stigma. Or that there has been. Although there's also a lot of community support so, I mean, I guess there's perceived stigma. But there are a lot of people who really care deeply about helping and eradicating this and um, the county has had several large community meetings where people turned out and um, for example there was a big one at Washington Academy where 200 plus came” (Interview 5). However, still others described a sense of community apathy towards the issue, “No, I don't think it's accepted but at the same token nobody's running anybody out of town. So, I don't know if that makes it look like it's being accepted” (Interview 6).

Solutions

While there are a plethora of barriers to treatment, there are also many solutions and prevention mechanisms that are in place currently or in the process of being implemented in many coastal communities. These solutions fell into ten sub themes: (1) *Lobster Specific Solutions*; (2) *Education*; (3) *Community Building*; (4) *Positive Role Models*; (5) *Law Enforcement*; (6) *Hub and Spoke Model*; (8) *Death Toll Scare*; (9) *Drug Testing*; and (10) *Mental Healthcare*.

Lobster Specific

Interviewees described ways in which care and prevention mechanisms could be catered to lobster fishers specifically. Three interviewees commented on the importance of being flexible

with scheduling and aware of the “non-traditional” work hours of a fisher. One interviewee explained,

“They’re not gonna show up if you make their appointment at low tide. It doesn’t work for them. The lobster fishermen need flexibility. They need to be able to call and say we’re out on the water and we’re not going to make it before four. So like, I do have some lobster fishing clients and I give them a lot of leeway on canceling appointments but then I say to them if it’s a stormy day call in the morning and we might have openings. So it’s like I just like already know that they’re probably not going to have a regular, that their work day starts at three in the morning and they might not be back at four o’clock when you give them that late afternoon appointment. So I try to be flexible and not penalize them for missing an appointments (Interview 5).

Another health care professional echoed this idea, “Yeah, one of the big factors for them is their hours. And they get a lot of people coming to me because I’m a private practitioner I set my own hours. I can try to be as flexible as possible but, you know, they’ll get ready for their day at three or four in the morning and are gone all day, you know to get to Rockland from Cushing and you know...sometimes it’s hard for them to get there before five o’clock so I try to give as many late hours as I can but many practices won’t” (Interview 19).

Another interviewee described specific ways of going about working with the lobstering community, “We know their behaviors, we know how they communicate...and we try to engage them in constructive conversations, the fishing industry in general whether a drug user or not. And there are nuances to how you communicate with these kinds of folks, you know.” He continued about how this knowledge could be useful for treatment providers, “There’s that kind of awareness that we can bring to the social service agencies and the people that are trying to support any drug users and tell them well, here’s how they behave and here’s how you might approach them that is going to be more receptive than setting up a formal meeting with suits and ties at the front of the room. So there are methods that we have learned... [that] could probably help agencies to learn how better to deliver their stuff...” (Interview 13).

Education

Education came up nine times as a way to help prevent opioid use, though many interviewees also noted education's shortcomings (as discussed previously). Interviewees discussed having recovering addicts or law enforcement official speak to youth in schools about their experience. One interviewee stated, "I have been invited to share about addiction and about my personal journey through addiction and recovery at all the local schools" (Interview 2). Another interviewee noted that these sorts of talks were not always useful to students and a deeper level of education was needed. He states,

One of the things we learned after doing that for a little while was that a lot of the kids were aware of that because they had friends or family who had done that. They had already seen that. So what we really started hearing from kids was that they really wanted useful information about not getting there. They weren't using words like resiliency but what they were really looking for were resiliency skills (Interview 16).

Another interviewee spoke from experience during a previous nationwide epidemic and feels that widespread well-funded education is necessary. She explained,

The prevention piece in schools...[is] one thing that I hope will happen. That I actually got to experience as a school counselor at the height of the HIV crisis kind of early 90's. There was just all of a sudden a flood of incredible high-quality education materials, training, every school had to teach it. It wasn't just an unfunded mandate of which there are many. It was - you have to do this, here's a specialist to work with you, here's curriculum, here's training. You know, like we must get a handle on this. We cannot have kids not knowing about this. And, so I think the same thing is probably hopefully going to happen with addiction and the opioid crisis where at some point there will be this incredible across the board response at the school level so at least that generation will have some protection (Interview 15).

Community Building

Four interviewees urged that developing a safe and healthy community is necessary. One healthcare professional discussed the importance of building a healthy community and suggested that parents play an important role in this he states, "to have intact families with parents who are loving supportive but also set limits and know what their kids are doing" (Interview 19). He continued,

So, if you had a healthy community with not only the parents but also with all adults, teachers and everyone involved in these kids' lives [and] is kind of keeping their eyes on them like these kids used to imagine it was 50 years ago where everyone in the neighborhood knew if Johnny was up to something bad they would tell the parents. Whereas right now a lot of stuff goes on that nobody is aware of except the kids (Interview 19).

Another community stakeholder suggested the importance of community involvement in civic activities. He stated,

Yeah, they're gonna fish, but maybe they become volunteers for the little league or they start a Cub Scout pack or they join the citizen league or the volunteer fire departments. I think we need more civic activities and encourage young people to get involved 'cause that's what make our communities much better, much more fun, and much more loving. And many of them are in broken homes right now. They don't have good models at home. Their parents might be addicts, have parents who are struggling with such and such - it's such a cycle. But we're committed through that program to try and get this group of young people to feel better about themselves as they grow up to be adults (Interview 13).

Positive Role Models

Three interviewees thought that having youth programs that provide both structure and mentorship, could help students make healthy choices. One community stakeholder stated, "Ultimately we would like to see an after-school program especially for middle school kids because there's not much to do, there's not a lot of positive constructive use of time or exposure to positive role models. For some kids I mean some kids have great role models and some kids their parents are in jail. You know, that sort of ripping apart of the community fabric that heroin is doing" (Interview 16). Similarly, another community stakeholder discussed, "And what we're in the process of doing...what were hoping to do um, you know, turn that church into an after-school program. Where we would do like boxing like MMA like grappling um, like teach them. Yeah, like kids love that. You know especially young men. And then you know find something for like the younger girls to do but just do like some sort of physical weight training. Some

things like that. Also, help them with their homework. We have a bunch of people in our community that have offered to help them with their homework” (Interview 2).

Law Enforcement

Eleven interviewees discussed how law enforcement is used as a tactic to prevent opioid use. Seven of the interviewees brought law enforcement up on their own while four were asked about law enforcement as a solution. Some discussed how law enforcement “could certainly help send the message that this is not something you want to do. Where as what you see [now] is people doing it with no consequences” (Interview 16). Marine Patrol was mentioned by five interviewees as a deterrent for drug use, as one lobster fisher stated, “Like, a lot of times Marine Patrol will board you and I mean they’ll go through your catch and they’ll make sure everything is right and just two weeks ago we got boarded when we were selling out lobsters and the warden actually asked to go through our lunch boxes just to check for probably drugs really, or if there’s anything illegal” (Interview 18). Others discussed how opioid use often presents itself in the lobster fishing community by way of theft of other fishers’ catches, gear etc. One lobster fisher explained,

You know that’s all the people that I know of, were stealing from family members or friends or like the guys in fishing they weren’t catchin’ anything in their own traps cause they weren’t focusing on fishing. They were focusing on their next high. They were going out and hauling the guy’s gear that were catching lobsters instead of just trying to focus on catching their own lobsters. They were just stealing from other fishermen in that way and they were stupid about it and the couple that I know of got caught almost immediately as soon as the Marine Patrol were notified. And it was very easy to catch ‘em because like I said, as soon as they get addicted their only focus is getting high not what’s going on around them” (Interview 17).

Others discussed how increased law enforcement could help to decrease the supply of drugs, “Like you have to look because you’re mostly talking about heroin and stuff that’s mostly, I think, created and grown outside the country. So, you know, you could go back to that point and try and prevent someone from entering the country, that might be a good idea. But once it’s

in the county and its getting distributed you know, there's always going to be someone bringing it up I-95 to here..." (Interview 14).

Others described how police are approaching drug use as a disease rather than a criminal act. One interviewee states,

What it is it's a disease it's a sickness and you can't fix a disease by locking somebody up so there need to be other aspects and I know the local agencies that I work with around are very aware of that and the chief of the department has basically made himself a liaison to the community where he is just dealing with these people directly almost on like a revolving door basis as far as (Interview 20).

Four interviewees, all from Boothbay, discussed that the local police aided in community members gaining access to treatment. They emphasized that the police recognize opioid use as disease rather than a criminal act. "Our police chief has been super active in the whole thing. He's been trying to develop more of an education slash treatment slash helpful type of thing rather than just you know, straight ahead arrest everybody type of thing" (Interview 7). Another recovering addict discussed how the police supported him, "I'm not a bad person I'm a person that needed help and you know even the chief of police, he's going out and helping people, he's out looking for people and he's going out saying we're not going to arrest you, we know you need help" (Interview 11).

Hub and Spoke Model

Two interviewees discussed a model of treatment for rural areas called the "Hub and Spoke Model" in which isolated, rural, under-resourced communities build connections with larger mainland communities (Interviews 9 and 16). An interviewee describes the ways in which this type of system relies on coordination and communication between organizations. She explained, "So, in Hancock County it looks like there is some pretty good organization there. The hospitals are pretty well-coordinated. There are lots of grass roots efforts that kind of feed into that. Whereas in Knox its much more fractured and I don't know this for a fact but I sort of

hear about the lack of leadership and the lack of capacity at PenBay hospital which is sort of the hospital in Knox County” (Interview 15).

Death Toll Scare

Four interviewees discussed that the rising rate of deaths due to drug use may act as a deterrent for people to use opioids and a catalyst for widespread response to the epidemic. An interviewee explained, “But maybe this new generation growing up you know, it’s different now. You hear about heroin and opiates. You think of drug overdoses, fentanyl. It’s on the news all the time now. So maybe that will play a factor in, ‘oh I’m not trying that’” (Interview 12).

Another interviewee hopes that at some point the number of people dying from drug overdoses will elicit a nationwide response to the epidemic, “It’s sort of hard to imagine how many deaths is enough deaths to sort of have the policy and the big money start to shift...So I think a lot more people are going to die. A lot more young people are going to die and at a certain point there will be enough public outrage that there will become, that treatment will become a lot more common a lot more available, much more in every community” (Interview 15).

Drug Testing

Four interviewees discussed how there has been talk of mandated drug testing in order for a captain to receive a lobstering license. Some saw drug testing as a useful approach to drug use in the industry while others noted the unfairness and difficulties of this practice. One lobster fisher explained,

So, if you're in the coast guard or you're on a big tanker ship or tug boats or something...to get your Coast Guard approved license you have to take a drug test and I believe that they sometimes do random drug tests just to make sure you're sober and not doing drugs. So honestly I think it'd be no different if you're running a multi-million dollar business on your own or self-employed. I think you oughta have to take a drug test to be on a lobster boat, I mean you're out there with the same people who have to take a mandatory drug test to save your life. And this is a helpful method and others are already doing it (Interview 18).

Another lobster fisher discussed his concerns about drug testing,

“I’d be all for it if at certain times a captain had to go in and do it because they are the guy, everybody's lives is in that guys hands. But jeez, if you know if you had drug testing for all the crews and all that. That would be you know... So say you know you're on the boat it's one of those guys that you'd never in a million years think then all of a sudden they do a drug test on your crew and you could be in a world of shit so what do you do? You have to have your own testing program or so you know. So there's a lot there's a lot that could happen” (Interview 4).

Mental Healthcare

Two interviewees suggested that an increased accessibility and openness to mental health services could help prevent drug use especially among youth. One community stakeholder stated, “I think that if mental health services or even just informal opening up and getting support, I think if that was more available to like 7th to 12th graders then I think there would be less opioid addiction” (Interview 5). Another interviewee explained the recognition of Adverse Childhood Experiences (ACEs) and their impact on mental health and substance abuse outcomes. She explains how addressing ACEs in the public school system is important, “And so we’re trying to do a lot of work around understanding the crisis ... one thing that I'm really trying to help schools with is ACEs training and trauma-informed schools. And learning how to develop practices and policies that are helpful to the students (Interview 15).

Discussion

In the past year, opioid related deaths have increased in the state of Maine (Russell 2018). While these increases have been seen statewide, the lobster fishing community in particular was identified by local press as a population that struggles with opioid use (Overton 2017). Though this trend was documented by journalists, a sociological examination of drug use in the lobster industry had yet to be conducted. Therefore, this project was developed in order to better understand the drivers behind opioid use in the lobstering community and gain insight into community specific treatment and prevention methods for opioid use. To answer these questions, in person and over the phone interviews were conducted with lobster fishers, community stakeholders, healthcare and legal professionals in three Maine lobster fishing communities: Machias, Deer Isle-Stonington, and Boothbay.

Across the geographically disparate but culturally similar coastal communities examined, a rather consistent story emerged to explain opioid use in the lobstering industry. Though the majority of interviewees suggested that drug use was not any more prevalent in the lobstering industry than in other industries, collectively, interviewees identified many factors that indicate the existence of a drug subculture. Though quantitative data is needed to support this finding, the themes that emerged in this study explain heightened use in the industry.

The drivers for opioid use that were most commonly identified in the lobstering community were: *making money, boredom, injury, work environment*. Interviewees identified two primary pathways into drug use, either *boredom* or *work injury*. In the context of boredom interviewees discussed how lack of things to do in rural isolated spaces lead to drug use. They explained that the limited options for alternative activities besides partying as well as limited alternative peer groups contributed to the commencement of use. This pathway into drug use was

described particularly in regards to youth in the fishery. The second primary path to opioid use was work injury. Interviewees described that individuals often begin to use opioids as a result of receiving a prescription opioid to address an injury or physical pain, and subsequently become addicted. Intensifying the effects of these modes of entry to drug use were the factors of *making money* and *work environment*. Nearly every participant discussed the large sums of money that lobster fishers make in a season as a driving factor for opioid use. The ability to afford drugs combined with the availability of opioids served as a platform for drug use in which someone could sustain their habit. The lobstering work environment provides the room for someone to sustain a drug habit without immediate consequences. The nature of the lobstering allows fishers to adequately fulfill their role while using drugs, this is especially true for sternmen who have little responsibility and a great deal of autonomy. To some extent there is also a level of tolerance for drug use within the industry, especially among captains towards sternmen who are using. Some speculated that this could be explained by lack of available deckhands.

Though not mentioned as commonly as other industry specific factors, *generational community risk factors* also played a large role in drug use. These risk factors often involved chaotic and harmful social environments and were often discussed as underlying causes of drug use that influenced all modes of industry specific entry into drug use.

Responses about treatment and prevention were less consistent among interviewees, however patterns did surface. Interviewees discussed the range of options for treatment available throughout the state including Suboxone and other medically assisted treatments and the types of treatment and recovery facilities available. Community specific approaches such as being able to return to work after treatment and being flexible to the non-traditional work schedule of a lobster fisher, were noted as mechanisms that aided in recovery of lobster fishers specifically. While

there is variation in the types of treatment options available interviewees described a number of barriers to receiving treatment including: difficulty accessing treatment in terms of geography and affordability, ineffective nature of education, lack of funding and policies that support treatment, and the shame and stigma of drug use.

Participants proposed a variety of solutions to the opioid epidemic, indicating the absence of a singular cohesive approach. Education was commonly brought up as a way to prevent opioid use, however some urged the importance of moving beyond simple drug education models and instead teaching things like resiliency skills and having trauma informed curriculum. Building healthy communities and addressing root causes of addiction by way of increasing alternatives to drug use and partying, such as increasing the number of recreation centers and participation in community organizations, were other commonly suggested solutions. Further, others discussed decreasing the cultural acceptability of drug use by way of positive role models and mentorship programs.

Implications for Theory

The drivers for opioid use within the lobster fishing community both support and further complicate a variety of established theoretical models of drug use. Zinberg's (1984) model of Drug Set Setting, Aker's (1979) Theory of Social Learning, Agnew's (1992) General Strain Theory, Acheson's (1988) work with lobster fishing communities, Putnam's (2000) theory on declining Social Capital, and Case and Deaton's (2015) *Deaths of Despair* literature all help to inform the patterns of entry into drug use observed in the lobster industry. However, because of the consistency and specificity of the driving factors for drug use within the industry it appears that a unique drug use phenomenon exists within the lobster fishing community that is not

captured in these other works. Therefore, a theory for how drug use operates within the lobstering community is proposed.

Zinberg's Theory of Drug, Set Setting

In many ways the driving factors for drug use in the lobster industry support Zinberg's theory of "drug" "set" and "setting" (Mui et al. 2014: 238). In this theory, chemical, personal and environmental factors interact and inform drug use. The "drug" component of Zinberg's theory aligns with the mode of entry in this study labeled *work injury* because the chemical properties of prescription drugs often create unintentional effects of addiction. Zinberg's "set" accounts for how the psychology and personality of the user aligns in part with the underlying factor of *generational community risk factors*, as mental illness was identified as both an individual and generational predictor. Further, the "setting" component of Zinberg's model reflects the components of *boredom* and *work environment* from this study and also encompasses some parts of the *generational community risk factors*. Using drugs as a lack of alternatives is a product of one's environment, as is the somewhat tolerant nature of the work environment aboard a lobster boat. *Generational community risk factors* can similarly be seen not only as individual level drivers like mental illness, but also as environmental chaos. Though Zinberg's theory can account for many of the drivers for drug use, it falls short because it does not account for the linear interaction between forces for drug use, and does not encompass all components. For example, *money* fits less neatly into the model and it could be argued that it straddles the "set" and "setting" categories because earnings someone makes is a personal circumstance that is a result of one's environment (Mui et al. 2014: 238).

Aker's theory

In part, Aker's social learning theory also helps to explain themes of learned drug use. Aker's theory in which deviant behavior is learned from family friends and peers (Akers et al.

1979: 683) is consistent with the notion of the generational and cultural acceptance of substance use in the lobstering industry and coastal communities more broadly. Interviewees described that fishers enter the industry as young as middle school and are often immersed in an environment in which alcohol and drug use is present. This immersion into substance use culture from a young age is coined “differential association” within Aker’s model, and is considered the most powerful predictive component of social learning (Akers et al. 1979: 651).

General Strain theory

Further, General Strain Theory helps to explain the observed trend that young people in the lobster industry, and coastal communities more broadly, often use drugs because there is a sense of boredom, lack of alternatives, and limited peer groups. In the context of General Strain Theory, this dissonance between the desire to do something and what is actually available is considered “blockages of desired goals” (Paternoster and Mazerolle 1994; see also: Agnew 1992), a tenant of “strain” which has been shown to trigger delinquent acts. While useful to understand the theme of boredom within larger social trends, it is important to note that interviewees did not always frame the lack of things to do in their community as a roadblock to doing what they wanted.

Social capital

After examining the story of drug use in Maine’s lobstering communities a paradoxical theme emerged. Participants from the lobster fishing communities visited expressed notions of a close-knit community structure, in which everyone knows everyone and everything about each other, while simultaneously acknowledging the existence of a culture in which being independent is praised, sweeping bad things under the rug is the norm and asking for help is stigmatized. Acheson’s work also describes the dual nature exhibited in lobster fishing communities stating that, “while the lobstermen themselves often subscribe to the stereotype of

the independent man-at-sea, they are in fact part of a complicated social network” (Acheson 1988: 48). Interestingly both close knit communities and independence facilitate drug use as seen in literature on social capital. The tight social networks of lobster fisher’s likely facilitate drug use within the lobstering community, as supported by Keyes et al. and others who suggest that strong social networks aid in accessing drugs (Keyes et al. 2014; see also: Runyon 2017). Further some have suggested that prescription drugs “may serve as a form of currency that is associated with increased social capital among drug users” (Jonas et al 2012). Though tight social networks exist within lobster communities the factor of boredom indicates an absence of alternative activities, a lack of community spaces like rec centers and limited job opportunities outside of the lobster industry. This lack of things to do supports Putnam’s theory of declining social capital (Putnam 2000) and has been shown to increase likelihood of drug use (Zoorob and Salemi 2016).

Deaths of Despair

The driving factors for drug use in the lobster fishing communities in some ways support and in some ways complicate Case and Deaton’s Model of Deaths of Despair. The use of drugs stemming from a place of boredom and lack of opportunity fits with the trends that Case and Deaton observe in which white middle-class men are despairing and dying due to “Cumulative Disadvantage” (Case and Deaton 2017). As many interviewees commented, lobstering is the predominant industry in their area, especially in Downeast communities (Machias Area and Deer Isle-Stonington Area) and there are few occupational alternatives. The Downeast area, for example, has the highest household dependency on the lobster fishing in the state (Dayton et al. 2014:14). This dependency on the industry is supported in part by Case and Deaton who assert that income and unemployment are not as much factors in increasing mortality (due to *deaths of despair*) as is the “steady deterioration in job opportunities for people with low education” (Case

and Deaton 2017: 429). Though unclear whether a choice or necessity, participants often commented that fishers followed the footsteps of their parents and went on to fishing straight out of high school without going to college. This is supported by data that found that 20% of Maine lobster fishers didn't finish high school and are less likely to go onto college than their peers (Singer and Holland 2008). Interviewees also suggested low levels of desirability and retention among sterning positions, therefore aligning closely with Case and Deaton's claim of *deaths of despair* stemming from frustration in finding viable job opportunities. However, it is important to note that this is not the case for all fishers, as many captains expressed a love and investment in their job. Further another point of divergence with Case and Deaton, is that those in the lobster fishing community who turned to drug use because of boredom were often noted to be part of the younger generation of fishers, and were going to parties and using drugs in a social context not the middle-aged bracket Case and Deaton discussed.

New Conceptual Model for Drug Use

Though these existing works help to explain the drivers for drug use within the lobster fishing community, none fully capture the specificity of drug use in the lobster industry. Therefore, a conceptual model below (see Figure 2.) was developed to demonstrate the interaction of community specific drivers for opioid use within this community. While any one of these factors (*making money, boredom, work injury, work environment and generational community risk factors*) on their own could describe drug use in many communities, the convergence of these factors are unique to drug use in the lobster fishing population. This model runs in a linear manner, beginning with the two pathways to drug use: *boredom* and *work injury*. Once drug use has been initiated continued use is supported by two primary mechanisms: *work environment* and *making money*. The work environment, in which lack of oversight, tolerance for drug use and ability to fulfil one's obligation, allow for the continuation of drug use. The ability

to purchase drugs allows for the maintenance of a habit. This entire system is influenced by *generational community risk factors* that impact all points of this trajectory. It is important to note that this is a preliminary model and therefore needs to be further tested and developed.

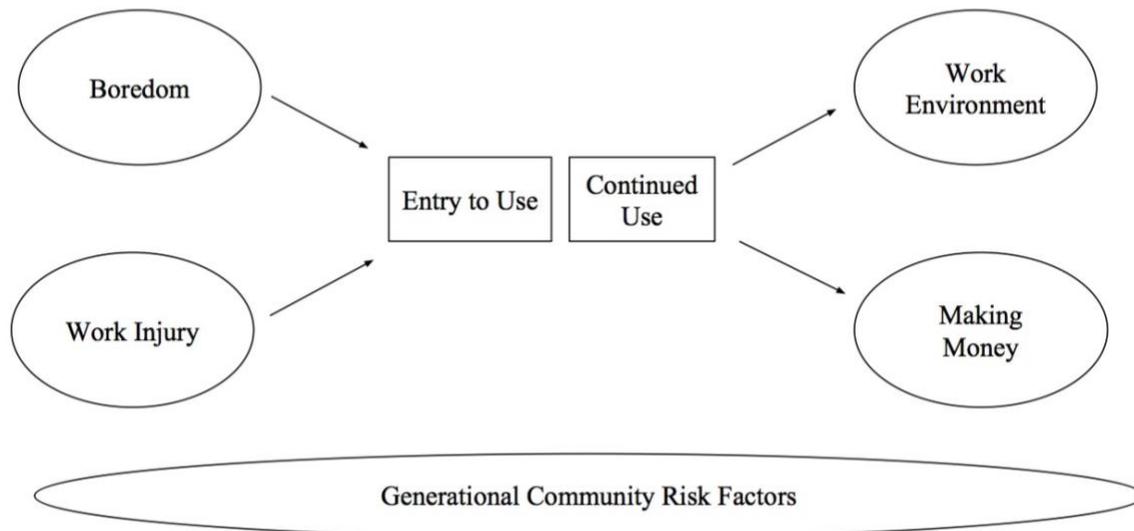


Figure 2. Driving factors for drug use in the lobstering community. The modes of entry into use are either boredom or work injury. Once use has been initiated, continued use is made possible by work environment and making money. All parts of this model are influenced by generational community risk factors.

Though there is a level of specificity in this model, it is possible that it is generalizable to other, rural, isolated resource based communities. For example, parallels between drivers for drug use in the lobster industry and laboring communities in rural Appalachia have been recognized. In this community as the pathways of “physical pain and recreational misuse” (Leukefeld et al. 2007) were identified and are similar pathways to the two modes of entry of *boredom* and *work injury* in this model. Further an established, generational, drug culture in rural Appalachia that originated among manual laborers in the mining and lumber industries (Leukefeld et al 2007) was similar to *generational community risk factors* in this study. The similarities of the model developed in this thesis and other like communities, demonstrates the

possibility of broader application. An interviewee from Deer Isle-Stonington summarizes the forces at play within the industry, suggesting that they are both specific and generalizable, a product of “time and circumstance” he states,

So I don't think there's anything inherent in the fishing industry more so than what you tend to find in poor rural communities the difference right now, in this slice of time is the amount of money people can make, they don't have to spend their last dollar on it they can still buy a new truck and do lots of fun things and still have plenty of money for drugs and so why not. And if you feel like crap everyday coming off the boat because you're taking a pounding for 15 years, opioids are pain killers. Like you know I see it. So I don't think they're more prone to it, it's more a facet of the industry but it's sort of one of those intersections between time and circumstance, that maybe a 100 years ago in the heyday of the lumber industry had there been synthetic opiates maybe there would be a similar situation (Interview 16).

Implications for Policy and Practice

With an understanding of the driving themes for opioid use in the lobster fishing community in the context of existing literature and theories, it becomes clear that the themes that emerged throughout this study provide important insights in terms of future policy to help address the opioid epidemic. The drivers for drug use in the lobstering community were rather consistent suggesting that there are specific treatment and prevention methods that are best suited to interrupt these pathways for drug use. Therefore it is useful to understand how the current treatment and prevention mechanisms available to the lobstering community align with the identified drivers for drug use. By exploring this alignment, the places in which treatment and prevention is adequate and where there is room for growth can be better understood.

Making Money

One prevailing theme that arose that was specific to drug use in the lobstering community was the monetary feasibility of purchasing drugs, as well as the ease of accessing drugs. Often interviewees commented on the lucrative nature of the lobster industry and the ability to make large sums of money in a short amount of time. Others also discussed how this

creates the sense among lobster fishers that they have a highly disposable income, though this money must be spread throughout the year.

A few interviewees suggested that financial literacy would prove helpful in order to teach responsible budgeting and spending habits. However, one interviewee discussed how financial literacy only goes so far and does not address the underlying habits of those affected by generational poverty and the “instant gratification” mentality that often comes with this (Interview 16). Though the vast majority of interviewees pointed to fiscal means as a driver for drug use, there was little discussed besides the mention of financial literacy as a solution that takes this driver into account. Money is an important avenue to consider when thinking about a comprehensive approach to opioid use, and should be included in work to address the crisis, not only when thinking about the lobster fishing community, but any other resource-based community that makes the majority of their funds in a short time frame.

Along with the monetary means to access drugs, the availability of drugs was addressed as an issue. Interviewees had a variety of suggestions about ways to mitigate the ease of access to opioids. In regards to injection drugs like heroin and fentanyl, interviewees discussed dealing with supply issues by increasing law enforcement, but in order for this to become a reality, funding is needed. In considering the decrease of supply, it is important to take into account the unintentional negative consequences of these regulations. Many interviewees discussed the tightening of prescription drugs, where people addicted to prescription pills were left with few options but to turn to more dangerous drugs like heroin. With this in mind it is important to consider the implications of decreasing the supply of drugs and the ways in which this will affect those who are already addicted and the lengths to which they will have to go to obtain drugs. Thus, though there is a clear need to decrease the availability of injection drugs it is critical for

treatment and recovery efforts to accompany any sort of increase in law enforcement that would decrease drug entry.

Work injury

Becoming addicted to opioids after a work injury proves a more difficult driver to address, as lobstering is an inherently dangerous job with more injuries than other jobs (Janocha 2012). Though most interviewees pointed to opioids prescribed by a medical professional as a problem, few commented on tighter regulations or continued care amongst doctors as a prevention mechanism. Possibly this is because of the existence of the Maine Prescription Monitoring Program that was enacted by the Maine legislature in 2015. This program limits prescriptions by providing a coordinated system between pharmacies and licensed medical professionals (DHHS 2018). While doctors must be held accountable for overprescribing and understanding the differential effects of opioids patient to patient (Golembiewski 2010), people being prescribed drugs must also play their part. Both interviewees and literature suggest that it is common in rural areas to gain access to drugs through social networks, and often family and friends (Keyes et al. 2014). Therefore it is clear that there is room for increased patient education about the harm of sharing prescription drugs. As one healthcare provider discussed, “in terms of over prescribing very often doctors will hold that as a number one cause but it’s not so much that they got people addicted as they prescribed medication and there was a lot available you know people got it who were careless about letting other people get it or they would actually sell it. So very often people got started on drugs not from the doctor or what the doctor did” (Interview 19).

Alternatives to opioid use to treat the aches and pains that accompany fishing have been offered to Maine fishing communities in the past. In 2011, a doctor wrote a piece published in the Fishermen’s Voice discussing the dangers of taking opioids and how they “should not be

taken while you are out to sea operating your boat, as it can interfere with your coordination and alertness” (Newman 2010). Instead the doctor advocates for fishers to use acupuncture for pain management. Many interviewees discussed the lack of insurance as a barrier not only for treatment for addiction recovery, but also as an obstacle to alternative pain management strategies like chiropractic medicine or acupuncture. For example, one lobster fisher discusses because he has insurance he is able to see the chiropractor when he has aches and pains, while his sternmen who does not have insurance can not (Interview 6). An expansion of programs like the Fishing Partnership Support Services who assist fishers in Maine and Massachusetts with finding medical insurance (FPSS 2018) could greatly help with pain management and prevention.

Boredom

Many interviewees recognized boredom as issue within their community as it pertains to drug use. Collectively interviewees suggested a multilayered approach to increase the availability of healthy alternatives. They suggested raising funds for recreational centers, providing after school programs where youth can build relationships with healthy role models, as well as funding coalitions that strive to address opioid use. These models have been supported in the literature, notably by the *Surgeon General's Report on Alcohol, Drugs and Health* that notes a protective factor for substance abuse is “Opportunities for positive social involvement” which involve “Developmentally appropriate opportunities to be meaningfully involved with the family, school, or community” (HHS 2016:37) Further a model has been developed called Communities That Care that has worked to build capacity around community involvement and a pilot program has run in Maine (HHS 2016). This models’ goals are to “1. Promote positive development and healthy behaviors for all children and youth. 2. Prevent problem behaviors, including substance use, delinquency, teen pregnancy, school drop-out, and violence” by

involving the whole community. This preventative approach has been shown to decrease drug and alcohol use as well as delinquent behavior (HHS 2016).

Models such as the Young Skippers Program are already in place and working to build community. This alternative academic program has the goal of providing guidance to young fishers and to engage students with the knowledge and skills needed in the fishing industry (Interview 13). The program gives, “Downeast Maine students, many who were otherwise unchallenged, uninterested or isolated in high school, the chance to study traditional seamanship and safety skills” (MCCF 2018). This program is currently run in eight high schools located in coastal communities across Maine and has 70 student participants (MCCF 2018). One interviewee hopes that this program will not only provide young fishers with the necessary knowledge and skills but also, “get those young people caring more about themselves and their place and their community” (Interview 13). It is clear that models like this one are important for building a sense of community among youth in the fishing industry and should be used moving forward.

Work Environment

Interviewees suggested ways that drug use in the workplace could be decreased. Law enforcement by Marine Patrol as well the Coast Guard were often mentioned as an existing deterrent for drug use. Others reflected that drug testing could prevent drug use within the lobster fishing fleet. Over the years, the idea of drug testing on lobster boats has been introduced both formally and informally to Maine state legislatures but has gained little traction and often has been met with resistance. For example at a Lobster Zone Council meeting in November of 2013, in a discussion about entry and exit ratios for license holders “there was discussion around an idea to have mandatory drug testing for license-holders” (Schreiber, 2013). Though there has

been talk of drug use within the lobster industry, little, if any, formal action has been taken toward addressing the issue by leadership. This lack of ownership and accountability likely allows for the continuation of drug use while working. The difficulty of finding and retaining laborers, further complicates that task of holding laborers accountable as there is an incentive for captains to retain sternmen regardless of the activities that they participate in and outside of the workplace.

Though there has been little formal acknowledgement of drug use by the fishery, in an article titled “The Voice of Safety” in the Fishermen's Voice, an occupational health professional reminds fishers of the dangers of being under the influence of alcohol or drugs on a lobster boat, even as a crew member. She writes,

A fishing vessel is not a car but rather, a work site, often with heavy machinery and certainly with hazards that can compound quickly once the dominoes start to fall. At a work site there should be zero tolerance for alcohol or drug intoxication. The crew should either be at work fishing or at the ready at all times to respond to developing situations. The fishing work site is isolated from 911, fire, police, and ambulances. Mayday calls have a response time related to the nearest willing Good Samaritan vessel and crew. This means that the fishing crew needs to be their own first responders (Backus 2011).

Articles like this bring drug use to the attention to members of the fishing community and demonstrate an attempt to create a community that does not tolerate use in the workplace. In response to the isolated nature of the work environment and distance from help while at sea, lobster fishers in Massachusetts have begun to carry Narcan on board (Holler 2017). Though not addressing the root causes of opioid use, Narcan can help to save lives. Initiatives like this one could be modeled and used in Maine’s fishing fleet, in case someone overdoses while at sea.

Generational Community Risk Factors

Interviewees commented that generational poverty, substance abuse, trauma together act as underlying causes of opioid use. Participants discussed the need for access to mental healthcare as well as cultural changes as ways to disrupt these cyclical processes. Addressing the culture around substance use in the lobster fishery likely proves a difficult task, but equipping fishers with knowledge of drug use as well as helping them find other positive role models may begin to change the culture. Many people discussed the stigma of drug use itself as well as asking for help. Navigating the values of independence and individualism that often pervade in fishing communities, and allowing for spaces where people can ask for help *and* access to it are important.

Moving Forward

After comparing existing treatments with the drivers for drug use found in this thesis, it is clear that people are already working to address the opioid epidemic in ways that are specific to the lobster fishing community. Despite these efforts, there are many areas in which treatment could be improved. The conceptual model of drivers for opioid use within the lobstering industry (See Figure 2.) as well as the barriers to treatment and prevention can be used to better inform these practices.

To begin, the way drug use is thought about in Maine's coastal communities must shift. To catalyze the change that is needed to decrease opioid use, the problem must first be acknowledged within the lobster fishing community. Beyond bringing opioid use to the public's attention through the news and media, change requires the leadership in the lobstering community, like the Department of Marine Resources and the Lobster Fishermen's Association, to start talking about the issue and take responsibility for drug use prevention. Though many have begun to address opioid use, the absence of accountability and community wide

complacency must be reversed on a large scale. While engaging in these conversations it is important to simultaneously break down the stigma of asking for help and seeking care. This begins by shifting the way opioid abuse is often discussed- as a choice- to thinking about opioid abuse as a disease. The acknowledgement of a problem will allow room for increased treatment and prevention programs.

In considering treatment, access is a large issue, especially for lobster fishers who often have long work hours and often do not have insurance. As some interviewees suggested, healthcare providers must be cognizant of these constraints and try to be flexible with schedules. Further providing inexpensive treatments options and making insurance accessible is a next step that should be taken to break down the monetary barriers to seeking treatment. The “Hub and Spoke” model was mentioned by two participants as a method they have explored to address geographical access. The “Hub and Spoke” model was developed and used in Vermont, and has significantly increased the capacity to treat those with Opioid Use Disorder. It allows for “Hubs”, places where comprehensive medical care is available, to connect with less equipped “Spokes” that already exist in communities. Making these connections allows for increased access to treatment and would work well in rural areas of Maine (Brooklyn 2017).

Another way to bring treatment close to home is through law enforcement. Many interviewees discussed that Marine Patrol officers have a close working relationship with many lobster fishers as they are tasked to monitor and enforce fishing regulations. Because of this existing relationship the Marine Patrol is in a prime social position, to assist lobster fishers in accessing treatment. Programs like the Police Assisted Addiction and Recovery Initiative (PAARI), a program that aims to decriminalize opioid use and assist those struggling with substance abuse disorder to get the help that they need (PAARI 2018), could be used by Marine

Patrol. Though policing drug use is not their primary role, if the Marine Patrol adopted a similar model to PAARI they could make a large impact. Interestingly, many from Boothbay noted this sort of police outreach is already happening informally in their local police department, thus indicating the potential for the model's further use by the Marine Patrol.

Boothbay as a Model

After examining the similarities in driving factors for opioid use and abuse throughout the fishing industry a rather consistent picture of drug use emerged. However, the story appears slightly different when examining the Boothbay area study site alone. Interviewees suggested that unlike other lobstering communities, especially those in Downeast Maine, much of Boothbay's economy is centered around tourism, not lobstering. Others described the proximity to Bath Iron works, a large employer, and one interviewee noted how the majority of his friends are in the construction business rather than lobstering. These observations are consistent with literature which finds Lobster Zone E (which coincides with the Boothbay Area) has one of the lowest household dependencies on fishing in the state (Dayton et al. 2014). Further Boothbay Harbor and Boothbay town have higher median household income than the Deer Isle-Stonington and Machias areas (U.S. Census 2016 "Boothbay", "Deer Isle", "Machias", "Stonington") even though they had about a quarter of the per pound landings (Department 2017).

When discussing the prevalence of drug use in the lobster industry, a few fishers from Boothbay said that they thought there was more drug use in Downeast communities than their own. They attributed this difference to large catches (thus higher earnings) and lack of things to do in the more rural parts of Maine. One interviewee states,

Yeah 'cause like I said our [Boothbay's] fishing has been steady the last couple decades we haven't seen a huge incline in catches that some of the Downeast guys do and they are just taking two or three deckhands on the boats and the deckhands are making big big

money. Sometimes that they've never seen before. Like I said they get a little addicted and after that they are hooked. And there's not much to do. Our community has a big Rec Center and one of the best YMCA's in New England and it's just you know were a pretty clean community for the most part I mean it's not a huge community and there's not nearly as many fishermen in our area, as there are in some of the Downeast communities that are just fishermen, I mean we have a lot of contractors and other stuff (Interview 17).

Additionally, the Boothbay community is closer to resources than the other more rural study areas. One Boothbay interviewee discussed that he sought treatment for substance abuse disorder in Portland, which was an hour away from where he lived. Though he had to travel, his proximity to treatment was significantly closer than those in other coastal communities. Other interviewees commented that in Boothbay, the police aided in treatment for opioid use disorder. Instead of taking a criminalizing approach to drug use, the police recognize it as a disease and treat it as such.

Together the alternatives of labor, the things to do, proximity to treatment, greater wealth and decriminalizing approach of law enforcement, appear to impact the low amount of perceived drug use within the Boothbay lobstering community. However more data, both qualitative and quantitative need to be explored before explicit conclusions can be drawn.

Limitations

This study has several limitations that are important to take into account when considering this the validity of the conclusions drawn in this thesis. Though consistent trends arose from conversations with interviewees, the small sample size of N=20 is worth noting as these voices only represent a small segment of those involved in the lobster community. Further this small sample size means that some of the themes that emerged were only mentioned by a portion of participants. The case studies were picked intentionally to demonstrate a representative sample of Maine's lobster fishing communities, but it is likely that not all experiences were given voice, especially in towns with varying geographic and economic

makeups. Snowball sampling was used to find participants and therefore there was variation in how much prior knowledge about the project they had, possibly influencing results.

Due to the variety of community members interviewed and the time and situational constraints of participants, interviews took a semi structured form. This variation resulted in interviews in which not all the intended questions were asked and some where different themes were followed more strongly than others thus resulting in non-uniform interviews. Here it is also important to note the biases that I as interviewer had on participant responses both over the phone and in person. My facial expressions, tone of voice as well as any power dynamics at play (especially in terms of interviewees in recovery) may have affected participant responses. Further my biases are inherently reflected in the coding process and there is the possibility that I misinterpreted interviewees statements.

Future research

One theme that continually emerged throughout this project, was that other fishing industries in Maine also experienced high rates of drug use. Interviewees often commented that the periwinkle fishing, clamming, and worming industries had more drug use than the lobstering industry because there is little accountability in these industries. Interviewees noted driving factors for drug use among clammers including that they are self-employed, have flexibility in their work schedule and can go directly to a wholesale purchaser and receive cash for their catch. Some interviewees had even heard rumors of drug dealers posting up at clam buying stations. Though drug use seems to be a problem in other fisheries in the state, these communities have received less public recognition than the lobstering community. The story told here focuses on the lobster industry not to negate the fact that the opioid crisis has impacted other communities, but instead to begin a dialog about drug use in Maine's fishing industries more wholly. Here it is

important to recognize the ways in which the lobster industry is valued by the state of Maine, both in terms of image and economy, in ways that other fisheries are not. Considering the 500 million dollars that the industry brought to the state in 2016 (Randall 2017) it is no wonder why the story of lobstering and drug use has been the first to come to the fore. We must consider the equity in this. Further investigation of the drivers as well as mechanisms for treatment and prevention for drug use in other Maine fishing industries demands the time and observation of researchers.

As commented on by many participants, the current lack of community wide data on health behaviors and substance use about the lobster fishery makes it difficult to assess the prevalence of drug use within the lobstering community. Future research should focus on gathering health and substance abuse data by profession in coastal communities as well as across the state. These data would be helpful in understanding the prevalence of drug use within the community. Such quantifiable statistics would be able to back up qualitative claims, and illustrate the need for increased funding and resources for drug use and abuse in lobster fishing communities.

This investigation did not focus on gender when thinking about drug use. While the lobster industry is made up of predominantly males, there are still a number of females in the industry. Future research should focus on the breakdown of drug use by gender in order to examine if gender plays a role in predicting drug use and if it influences drug use experiences.

Conclusion

Taken as a whole this investigation has provided insight on the intersection of the opioid epidemic and Maine's lobster fishing community. While there are a variety of reasons that one may begin to use drugs, this investigation has illustrated common industry specific factors for

opioid use in Maine's lobstering community. Though prevalence statistics by industry are not available, the consistency in explanation for drug use across the three study areas suggests that there are industry specific mechanisms that inform pathways to use among lobster fishers. This thesis also looked at the treatment and prevention options available in the coastal communities and it became clear that there are a vast variety of barriers to treatment and prevention. With the knowledge of the driving factors as well as barriers in mind, treatment and prevention plans can be better informed and hopefully interrupt the patterns of drug use present in the lobster industry. Moving beyond this thesis, the drivers and barriers in the lobstering community could help to inform drug use in other rural, resource based communities. With the knowledge gained from this thesis, it is the hope that stories like that of Christopher Hutchinson- the lobster fisher who was under the influence of opioids when his boat capsized, killing the crew members on board- can be prevented.

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Appendix A

Interview Questions for Lobster fishers

- How long have you been in the lobster fishing business for?
- Why did you start working in this industry?
- What are the best parts of the job? What are the worst parts?
- How secure is your job? Are you part of a union (or similar network)?
- What is your highest degree of schooling?
- What is your relationship status?
- Do you ever experience physical pain from the manual labor demands of lobster fishing?
- Are you satisfied with your pay? Has it changed over the years? Has the industry changed over the years in terms of profitability?
- Do you think opioid use is prevalent in your community, specifically the lobster fishing line of work?
 - If yes, why do you think this is? If no, why?
- Do you know anyone in your community who has used opioids?
 - Why do you think that they started using?
- Have you seen the use of opioids impact people on the job?
 - Is this a problem?
- What is the culture around opioid use in your community? Is opioid use accepted? Stigmatized?
- Do you feel part of a community?
- Do you ever feel isolated in your line of work?
 - If yes, do you feel upset/sad about this?
- Do you feel comfortable asking others for help?
- Are there spaces to talk about your feelings in your community?
- Do you ever feel down or hopeless for extended periods of time?
- Are there treatment options for people in your community who are addicted?
 - What are they?
 - Do you feel they are effective?
- Do you think Lobster fishers are more likely than others in the community to use drugs?
 - If yes, why?
 - If no, who is?

Interview Questions for Medical Providers

- How long have you been treating those affected by opioid addiction?
- Have you seen a shift in the number of people who struggle with addiction over the years?
- Is there a certain population of people that opioid addiction affects particularly? Why do think it affects them?
- What are the primary risk factors for opioid addiction in the community that you treat?
- Why do you think opioid use is prevalent in your community?
- Do you think Lobster fishers are more likely than others in the community to use drugs?
 - If yes, why?

- What is the culture around opioid use in the community you treat? Is opioid use accepted? Stigmatized?
- Are there spaces to talk about your feelings in the community you treat?
- Do you think one's identity as a Mainer plays into opioid use (i.e. being seen as a highly independent).
- What are treatment options for people in your community who are addicted?
 - Do you feel they are effective?
- How do you think that they could be more effective?
- Are there treatments that would work particularly well for the population you treat?
- What is the prevalence of deaths due to suicide or other deaths of despair in the population you serve?

Interview Questions for Community Members:*

- Do you think opioid use is prevalent in your community?
- Is there a certain population of people that it affects particularly? Why do think it affects them?
- Are there spaces in your community to talk about emotions and or hardships?
- Do you find people in your community are able to ask for help if they need it?
- Are there spaces to talk about your feelings in your community?
- What are the characteristics you would use to describe lobster fishers in your community?
- Do you know anyone in your community who has used opioids?
 - Why do you think they started using?
- What is the culture around opioid use in your community? Is opioid use accepted? Stigmatized?
- Do you think lobster fishers are more likely than others in the community to use drugs?
 - If yes, why?
 - If no, who is?
- What are the treatment options for those in the community who are addicted to opioids?
 - How accessible are these treatment options?
 - How effective are these treatment options? What would make them more effective?

**note: questions may vary depending on context and the individual's role in the community. Some examples of community members include: members of Maine lobstering and wildlife committees, friends and family members of lobster fishers*

Consent Form

Description of Study:

My name is Anna Franceschetti and I am senior at Bates College in Lewiston Maine. I am conducting research about lobster fishing communities as part of my senior thesis. This investigation was designed is to examine opioid use in lobstering communities. The purpose of the study is to gain a better understanding of the factors that are unique to the Lobstering community in terms of drug use, as well as methods of prevention and treatment that are specific to this population.

By agreeing to be part of this study you will be asked a series of questions, ranging from general topics, to more specific ones about wellbeing and drug use in your community. You are not required to answer all questions and you retain the right to skip questions or withdraw from the interview at any point. In this study, participants will be asked about illegal activities, such as drug use. I will maintain confidentiality to the extent allowed by the law and names will not be kept. However complete confidentiality cannot be guaranteed. On rare occasions, courts have subpoenaed (required release) research records. Further, though it is not the intent of the study if it becomes evident that there is ongoing physical abuse, sexual abuse or child abuse/neglect it is my ethical responsibility to report this information to the authorities. It is estimated that your participation will take from 15-60 minutes. Contact information can be found at the bottom of this form and you can withdraw part or all of your statement at anytime.

Interviews will be recorded using a handheld recorder/iphone and notes will be taken. Recordings will be deleted after they have been transcribed into prose and checked for accuracy. Participant confidentiality is of the utmost importance. Names and identifying information will be changed to protect privacy when used.

Risks of Study:

The risks involved in the study include discussion of topics that may be triggering. Though questions are not intended to make you feel uncomfortable they may bring up unpleasant events or thoughts. Additionally, it should be recognized that the information you present will be published in an academic setting, however all identifying information will be omitted from your statements and pseudonyms will be used.

Benefits of Study:

There are no direct benefits of participating in this study, except for information gained and contributions to public knowledge.

By signing the following I acknowledge that I am aware of the purpose as well as the risks and benefits of the study, and understand that my participation is completely voluntary and am aware of my rights as a participant.

Participant Signature: _____

Date_____

Researcher's Signature: _____

Date _____

Please contact the following with any questions or concerns:

Principal Researcher Anna Franceschetti: afrances@bates.edu

Professor of Sociology Michael Rocque: mrocque@bates.edu, (207) 786-6196

IRB co-chair Helen Boucher: hboucher@bates.edu, (207) 786-6395

Additional Consent Form for Recordings of Interviews

Title of the Study: *Opioid Use in Lobster Fishing Communities of Maine*

In addition to agreeing to participate, I consent to having the interview audio recorded. I understand that the recording of my interview will be transcribed by the researcher(s) and erased once the transcriptions are checked for accuracy. Transcripts of my interview may be reproduced in whole or in part for use in presentations or written products that result from this study, but will not be linked to my name. Neither my name nor any other identifying information (such as my voice or picture) will be used in presentations or in written products resulting from the study, unless I give my explicit permission.

A. I consent to having the interview audio recorded.

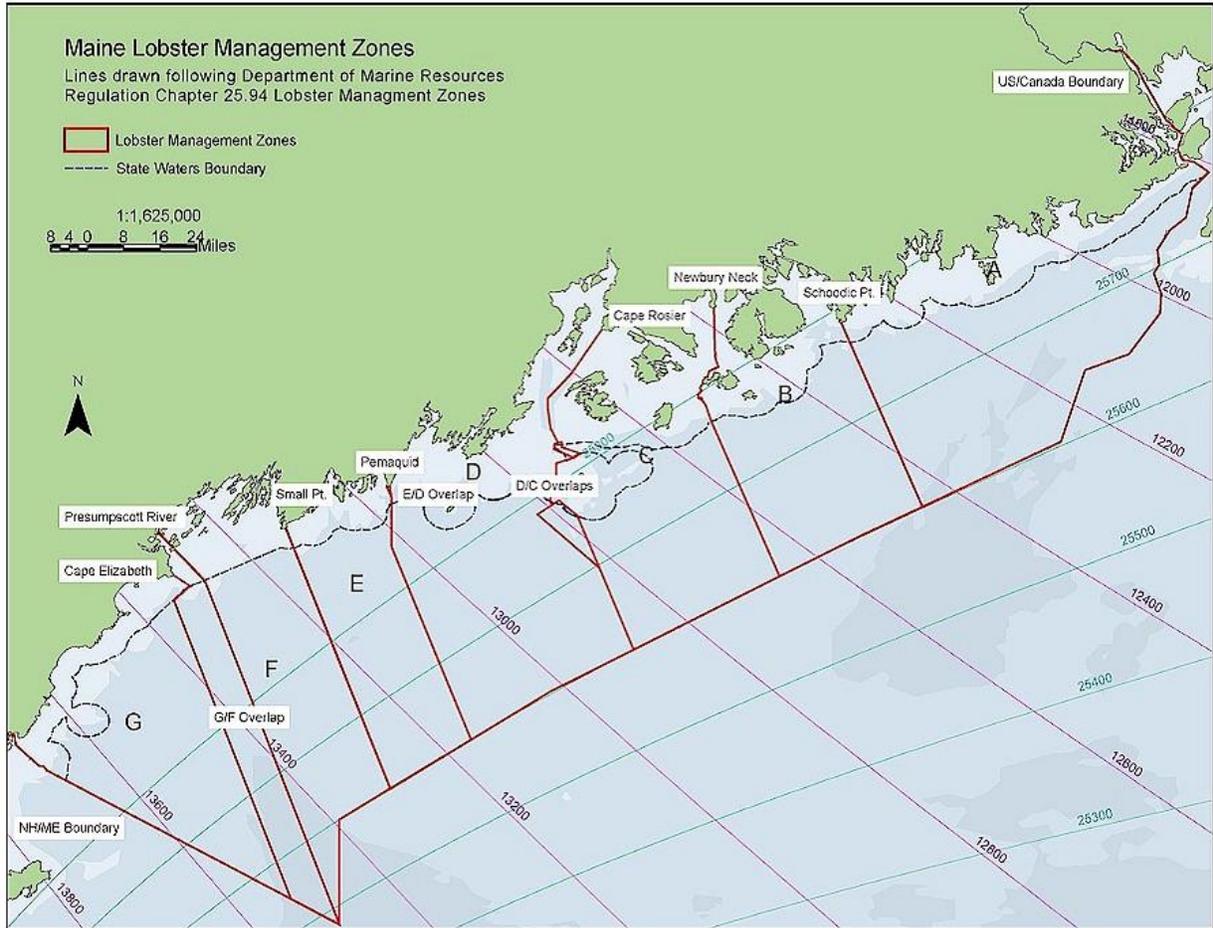
Name (printed): _____

Signature _____ Date _____

B. I consent to use of my words in presentations or in written products resulting from the study. (If I do not sign, my words will not be used.)

Signature _____ Date _____

Appendix B



C. Rubicam, 8/9/02, DMR Maine Whale Plan

Figure 3. Map of Maine Lobster Management Zones.

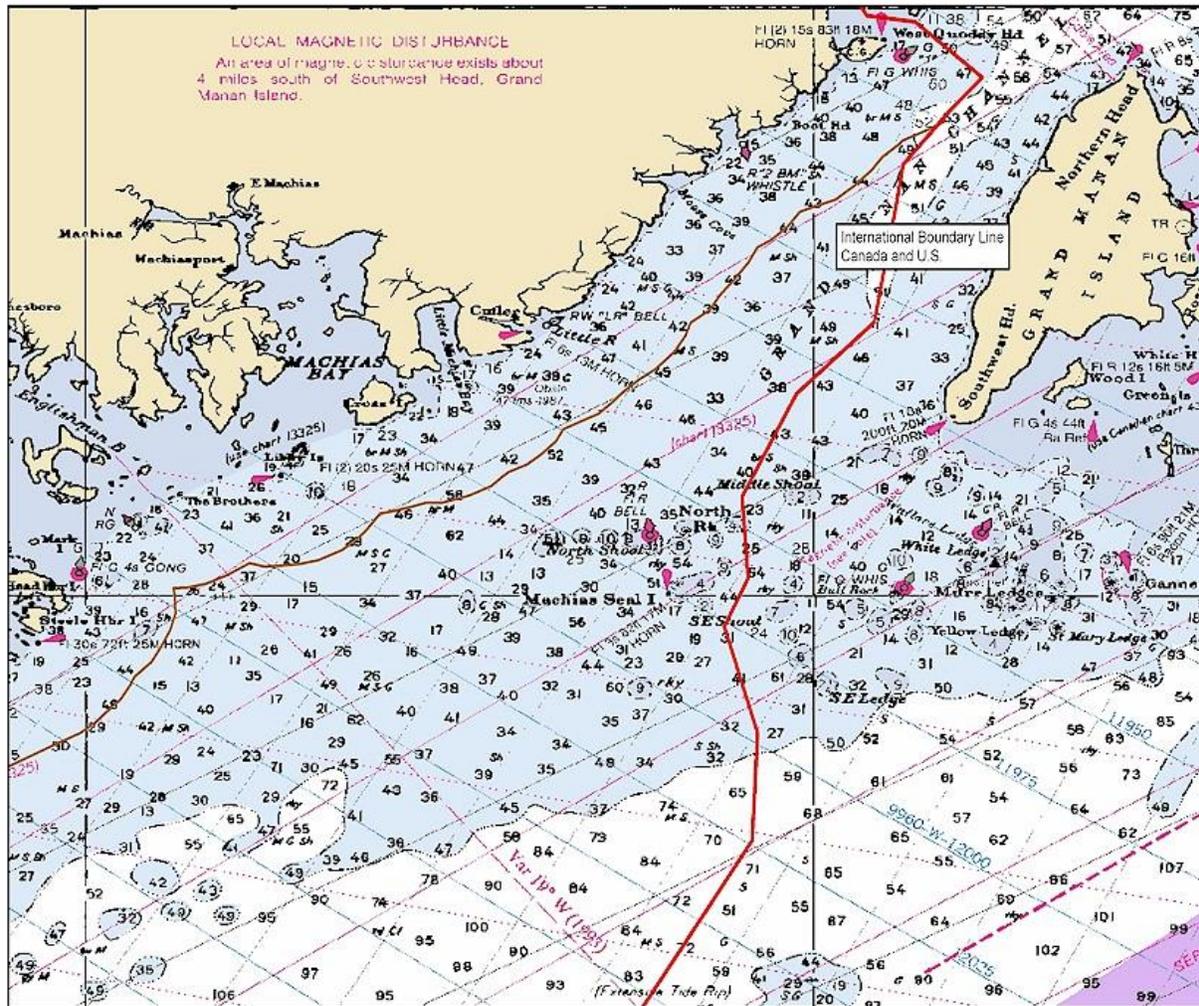
Department of Marine Resources. 2016. *Maine Lobster Management Zones: All Zones*. Retrieved March 18, 2018 (<http://www.maine.gov/dmr/science-research/species/lobster/zonemaps.html>).

Maine Lobster Management Zones
Zone A (east)- State Waters

Lines drawn following Department of Marine Resources
Regulation Chapter 25.94 Lobster Management Zones

1:360,000

2.5 5 7.5 10 Miles



C. Rubicam, 8/12/02, DMR Maine Whale Plan

Not for navigational purposes Soundings in Fathoms
NOAA Chart 13260 33rd ed. Oct 16/93 Original scale 1:378,838.

Figure 4. Machias Area, Washington County = Zone A East

Department of Marine Resources. 2016. *Maine Lobster Management Zones: Zone A*. Retrieved March 18, 2018 (<http://www.maine.gov/dmr/science-research/species/lobster/zonemaps.html>).

Maine Lobster Management Zones
 Zone C- State Waters

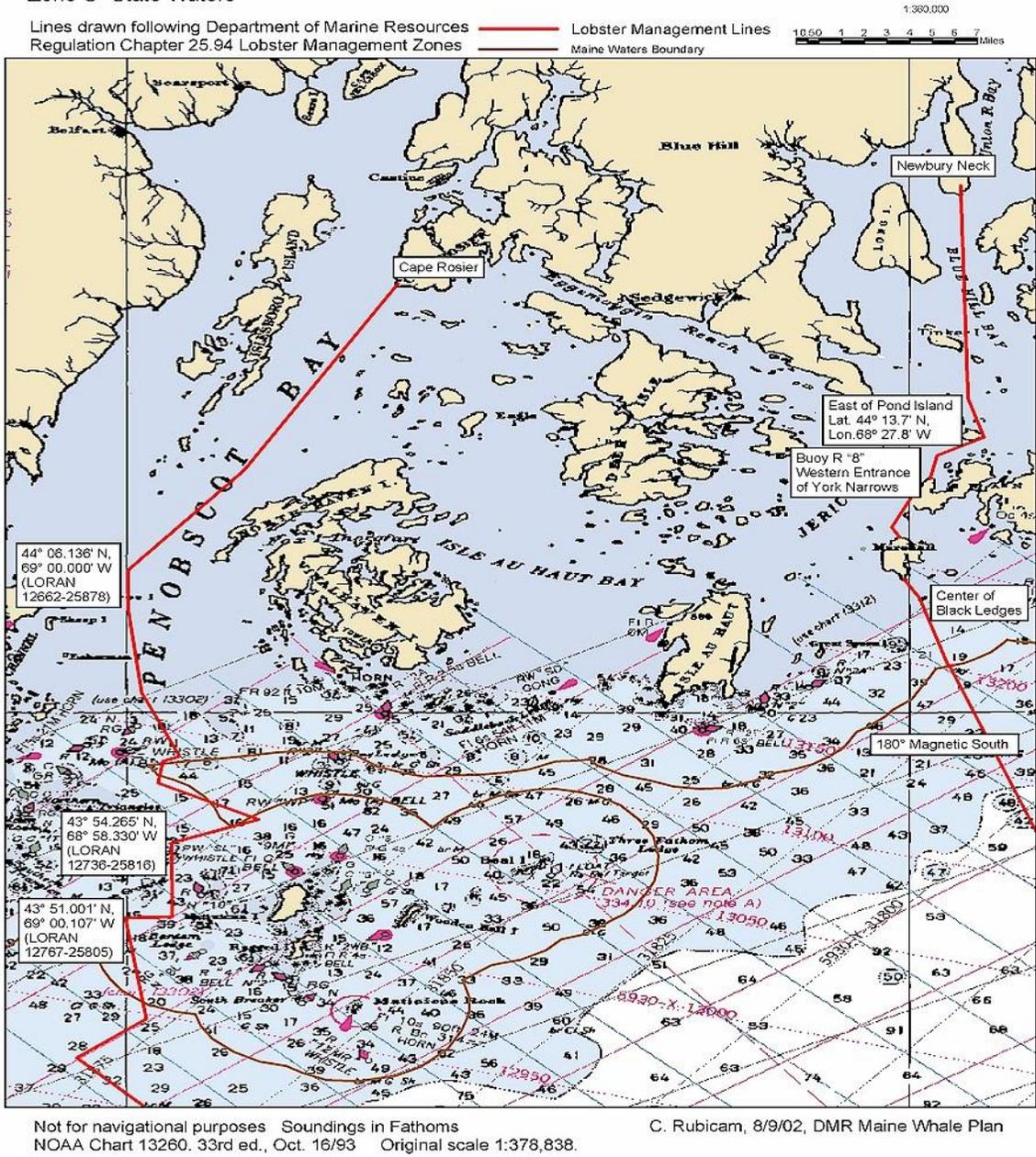


Figure 5. Deer Isle and Stonington Area, Hancock County = Zone C

Department of Marine Resources. 2016. *Maine Lobster Management Zones: Zone C*. Retrieved March 18, 2018 (<http://www.maine.gov/dmr/science-research/species/lobster/zonemaps.html>).

Maine Lobster Management Zones

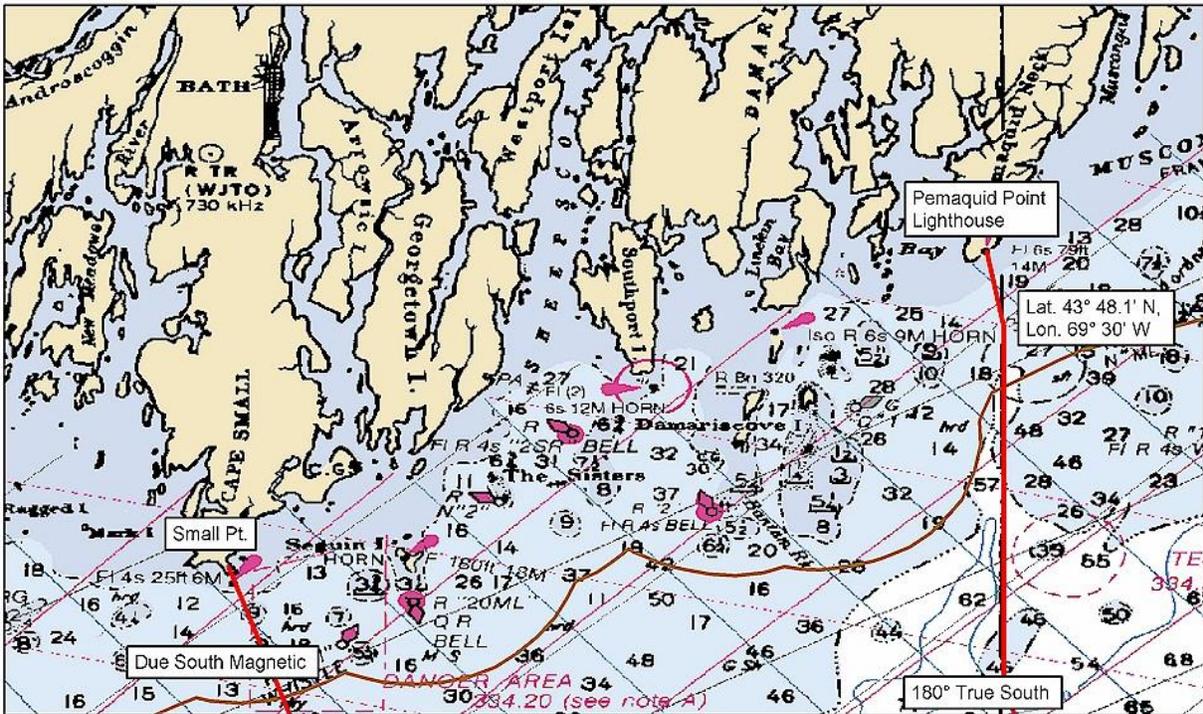
Zone E- State Waters

Lines drawn following Department of Marine Resources
Regulation Chapter 25.94 Lobster Management Zones

— Lobster Management Lines
— Maine Waters Boundary

1:325,000

0 1 2 4 6 8 Miles



Not for navigational purposes Soundings in Fathoms
NOAA Chart 13260 33rd ed. Oct 16/93 Original scale 1:378,838.

C. Rubicam, 8/9/02, DMR Maine Whale Plan

Figure 6. Boothbay Area, Lincoln County = Zone E

Department of Marine Resources. 2016. *Maine Lobster Management Zones: Zone E*. Retrieved March 18, 2018 (<http://www.maine.gov/dmr/science-research/species/lobster/zonemaps.html>).