ANALYSIS OF SUBSTANCE ABUSE ON CAPE COD:

A BASELINE ASSESSMENT

Prepared for:

Barnstable County Regional Substance Abuse Council (RSAC)

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EXECUTIVE SUMMARY

The purpose of this report is to provide a snapshot of substance dependency, and its related costs, for Barnstable County, Massachusetts. The report is intended to inform programming and policy needs as defined by the Barnstable County Regional Substance Abuse Council (RSAC).

This report was produced by the Barnstable County Department of Human Services. The Department plans, develops and implements programming to improve the delivery of human services, promote health and social well-being, and strengthen community care for all Barnstable County residents.

The RSAC was convened and funded in 2014 by the Barnstable County Department of Human Services after members of the County's Health and Human Services Advisory Council identified the need for regional coordination around the issue of substance abuse. In particular they identified a need for a systematic and thoughtful approach to connecting the variety of substance abuse related efforts already underway across the region and to develop regional recommendations for further action.

The Barnstable Regional Substance Abuse Council brings together a diverse group of 35 stakeholders representing local government, elected officials, law enforcement, courts, schools, healthcare providers, and community coalitions.

The Council's goal is to implement a coordinated and comprehensive regional approach to substance abuse across the continuum of prevention, treatment and recovery, harms reduction and criminal justice. The Council utilizes the public health approach which focuses on population health and organized community efforts rather than on individual behavior.

We would like to acknowledge and thank Council members, community members and organizations who provided critical local information and feedback on the report as it was being developed, the Massachusetts Technical Assistance Partnership for Prevention, Health Resources in Action, and the Barnstable County Commissioners for supporting this effort.

The Report

In response to the need for a coordinated regional plan to address substance abuse on Cape Cod, the Barnstable County Regional Substance Abuse Council proposed to measure the impact of substance abuse using a "public health-oriented approach based on the four pillars model of prevention, treatment, harm reduction, and public safety".[1-5] [i]

[i] Pugh T, Netherland J, Finkelstein R, Sayegh G, Meeks S, Frederique K. **Blueprint for a Public Health and Safety Approach to Drug Policy**. New York, NY: New York Academy of Medicine; 2013.

This work is innovative in that it closely examines local epidemiological and cost data across the spectrum of state and local entities involved with addressing substance abuse.[6] Data were obtained from the sectors of medicine, substance abuse treatment and recovery, prevention, harm reduction (e.g. needle exchange), law enforcement, judiciary, and corrections. The information presented in this report was compiled over a 10-month period (May 2014-February 2015). Data collection and analyses were conducted by staff from the Barnstable County Department of Human Services and Health Resources in Action (HRiA).

The report's findings are organized by:

1. Epidemiological data on the prevalence and incidence of substance use and associated mortality
2. Cost analysis by substance across the domains of harm reduction, prevention, treatment and recovery, and law enforcement
3. Environmental scan of existing services and resources.

Regional Context

Barnstable County (also interchangeably referred to as Cape Cod in this report) retains a unique social cohesion due to its semi-rural character and geographical remoteness from urban resources. However its age-adjusted rates (per 100,000 residents) of alcohol addiction, drug addiction, accidental overdose, and deaths among adults (18 +) do not differ substantially from those of Massachusetts.

Notably, the county is home to a disproportionately large population of older adults (age 65+), 25%, when compared to Massachusetts (14%).[7] This feature has the potential to impact the community's planning and implementation of region-wide substance abuse prevention and treatment interventions.

Barnstable County youth are at risk for uptake of substance abuse habits during their high school years. In two town-based surveys[ii] high school students self-reported substance-related behaviors at rates that are generally equivalent to their state-wide peers for lifetime and current alcohol use, lifetime marijuana use, lifetime heroin use, and lifetime cocaine and ecstasy use.[8] Findings further suggest that current marijuana use, binge drinking, and lifetime use of over-the-counter (OTC) drugs to get high amongst Cape Cod high school students may be higher than statewide rates. However, additional survey data from a representative sample of high school students Cape-wide would be needed to render more conclusive judgment.

Findings

The following is a summary of key findings (figures stated are estimates):

[ii] Falmouth and Sandwich, 2012-2013.

Epidemiological Findings

- Alcohol addiction is endemic.[iii] The estimated number of persons addicted to alcohol on Cape Cod (17,063, or 7.9% of the population[9-12]) outnumbers that of all other substances combined. Although prevalence of substance abuse is lowest amongst older adults, over 2/3 of treatment admissions for older adults are due to alcoholism.[13]
- At least 3.1% of Barnstable County residents are addicted to or dependent upon heroin or prescription opioids (5,691 persons)[9,11,14,15], and 3.1% are addicted to "other drugs" (5,691).[14,16] This is very likely an under-estimate of the prevalence of heroin/prescription opioid users.
- Approximately 27,000 adults (age 18+) and 3,000 children (17 and under) on Cape Cod use marijuana regularly. Approximately 9% of those users are addicted to marijuana (or 2,715 persons)[10,12,17].
- Mortality rates attributable to alcohol dependence and drug dependence were roughly equal in 2013 (0.80 % and 0.90% respectively). However, an accelerating mortality rate from heroin and prescription opioid overdoses from 2013 through 2014 shows that deaths attributable to this cause are increasing at a much higher rate than deaths attributable to alcohol.

Cost Analysis Findings

- The estimated annual direct cost[18] of substance abuse in Barnstable County is $110,085,000 (the base year is 2013). These cost findings are summarized in Table 6 of the full report. Direct costs are those costs that are identifiable as being a direct result of substance abuse activity on Cape Cod (e.g. treatment, rehabilitation, arrests, incarceration, prevention).
- Annual expenditures on prevention and on community harm reduction in 2013 were less than 1% each of the total direct costs spent on combating substance abuse in Barnstable County; 0.9% for prevention activities, and 0.6% for harm reduction.
- Annual expenditures on substance abuse related law enforcement activities in 2013 were approximately $56,900,000 (52% of total), representing expenditures by the Police, Courts, Probation, Sheriff's Office/Jail, District Attorney's Office.

[iii] **Endemic**: A disease native to a people or region, or which is regularly or constantly found among a people or specific region. **Epidemic**: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time.

- Annual expenditures on treatment and recovery activities were approximately $51,457,000 in 2013 (47% of total), representing services from agencies such as Gosnold on Cape Cod, Cape Cod Healthcare, community health centers, emergency medical services, private providers, self-help meetings, and sober living facilities.
- Of the total direct costs associated with substance abuse in Barnstable County, approximately 43% are attributable to the abuse of alcohol and 52% are attributable to the abuse of heroin/prescription opioids.
- Additional work is needed to further define and analyze the impact of the "Other Drug" category since it represents a non-trivial amount of cost, morbidity, and mortality in the system.
- Preliminary work on external costs[iv] suggests that for every $1 of direct cost there may be, conservatively, a further one to three and a half dollars ($3.5) of productivity costs associated with substance abuse in our community ($110 million to $355 million).

In this analysis we use a Cost-of-Illness[19] approach combined with basic cost allocation to estimate the expenditures attributable to substance abuse for agencies and participants in the four domains of prevention, treatment and recovery, harms reduction, and criminal justice. It is important to note that the intent of the costing work presented assumes a 15% margin of error, which the RSAC members have agreed is adequate to provide baseline information that is actionable by the Council. It is recognized that data sources may cross multiple years and be inconsistently available, thus the reported substance abuse-related costs are, at best, estimates.

Key Informant Interviews and Resource Inventory

The report includes a comprehensive environmental scan undertaken by the Department to identify resources and identify gaps in service delivery. A series of key informant interviews were conducted from May 2014 to February 2015. Key informant interviews are qualitative, in-depth interviews of people who have specific knowledge about the topic of substance abuse and related issues in Barnstable County.

A resource inventory of substance abuse-related services in Barnstable County was compiled. The protocol for inclusion of substance abuse sector resources was determined prior to data collection and only those resources that were directly related to addressing substance abuse were considered for inclusion. It is acknowledged that there are a number of organizations that

[iv] **Direct Costs + External Costs = Total Social Cost.** The **external costs** of substance abuse include those that impact local community and economic environment various ways, for example: lost worker productivity, declining neighborhoods.

have tangential effects on substance abuse in Barnstable County, though they are not directly serving substance abuse-related needs. Many of these tangential programs provide prevention-focused services, whose benefits are multifaceted. This resource inventory does not fully represent the resources available to Barnstable County citizens that are located in other areas of the state or country.

Next Steps and Preliminary Recommendations

This report provides a baseline assessment of the epidemiological and financial cost features of substance abuse on Cape Cod and an inventory of community resources involved in addressing the consequences of these behaviors. As a next step the RSAC will offer recommendations for action, a plan for implementing those recommendations, and a timeline for doing so.

Based upon the integration of the key findings of this report, the following are **preliminary recommendations** for consideration by the Regional Substance Abuse Council to inform their priority setting work.

A. Harm Reduction

i. Increase awareness that addiction is a chronic medical condition.

ii. Educate consumers on the appropriate use and disposal of prescription drugs.

iii. Engage health care professionals, including prescribers and pharmacists, to reduce the negative effects of prescription drug abuse.

iv. Educate the public and policy makers about the importance of harm reduction practices.

v. Institute active systematic surveillance of federal, state and locally generated substance abuse data.

B. Prevention

i. Prevention efforts must address alcohol use, non-medical use of prescription drugs, and illicit drugs.

ii. Identify effective prevention interventions and programs which are evidenced-based for use in Barnstable County.

iii. Evaluate current prevention efforts in Barnstable County.

iv. Establish a unified substance abuse prevention effort.

C. Treatment and Recovery.

i. Centralize substance abuse treatment referrals to help consumers, families, first responders, schools and providers to be matched with appropriate resources and assisted in navigating the treatment system.

ii. Conduct a review of the adequacy of treatment resources available to Cape Cod residents.

iii. Expand recovery support services on Cape Cod, especially for youth and young adults (age 15 to 25). Consideration should be given to developing a recovery high school.

iv. Substance abuse clients exiting the criminal justice system could benefit from evidenced-based case management services as part of re-entry planning/recovery support.

v. Given the impact of addiction on youth and young adults, youth and youth in recovery must be included in the planning process.

D. Criminal Justice/Law Enforcement

i. Support and expand promising community policing programs, substance abuse treatment programs for people in the correction system, re-entry programs and community based supports, and diversion programs such as the drug court and the juvenile and young adult diversion programs.

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A full copy of the report is available at:
http://www.bchumanservices.net

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TABLE OF CONTENTS

1. INTRODUCTION

Throughout the text we refer to Barnstable County and Cape Cod interchangeably.

This report was produced by the Barnstable County Department of Human Services (BCDHS). BCDHS plans, develops and implements programming to improve the delivery of human services, promotes the health and social well-being of County residents, and works to strengthen community care for all Barnstable County residents.

BCDHS organized and staffed the Barnstable County Regional Substance Abuse Council (RSAC) in January 2014 to develop a coordinated and comprehensive regional approach to substance abuse across the continuum of prevention, treatment, criminal justice and recovery. The Council aims to establish a communication infrastructure across towns, providers, organizations and individuals on Cape Cod in order to identify and address gaps and disparities in the service system, and maximize interagency collaboration, funding and resource opportunities.

The purpose of this report is to provide a snapshot of substance dependency, and the related costs, for Barnstable County, Massachusetts. It has been created to inform programming and policy needs to be defined by the Barnstable County Regional Substance Abuse Council. The report provides a portrait of Barnstable County in terms of alcohol and prescription medication misuse and illicit drug use, the consequences resulting from substance use and abuse in terms of morbidity and mortality, insight into associated behaviors (such as motor vehicle crashes and risk of infectious disease), and cost estimates of the impact of substance abuse in Barnstable County.

The RSAC employed a public health approach to examine substance abuse on Cape Cod. Specifically, the Four Pillars Model was utilized to guide analysis[2,3] due to its success in describing community-level initiatives to address the problem of substance abuse. In the Four Pillars Model substance abuse behaviors, outcomes, and costs are divided amongst the following four Domains:

1. Harm Reduction
2. Prevention
3. Law Enforcement

4. Treatment and Recovery

Some definitions will be useful here.

Harm (or "Harms") and "Harm Reduction"[20,21]

- **Physical Harm** includes death, illness, addiction, the spread of disease such as HIV/AIDS and hepatitis, and injury caused by drug-related accidents and violence.
- **Psychological Harm** can include fear of crime and violence and the effects of family breakdown.
- **Societal Harm** refers to breakdown of social systems.
- **Economic Harm** includes the large-scale impact of the illegal drug trade and enforcement efforts as well as economic harm to individual users and society, including costs, of decreased and lost productivity, workplace accidents, health care harm, and business and neighborhood economic development.

n.b. Harm to the individual may be physical, psychological, spiritual, social, or economic.

Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use for both the dependent individual and the community. Examples include needle exchange programs, community policing, and distribution of Narcan (naloxone hydrochloride) to reverse opioid overdose.

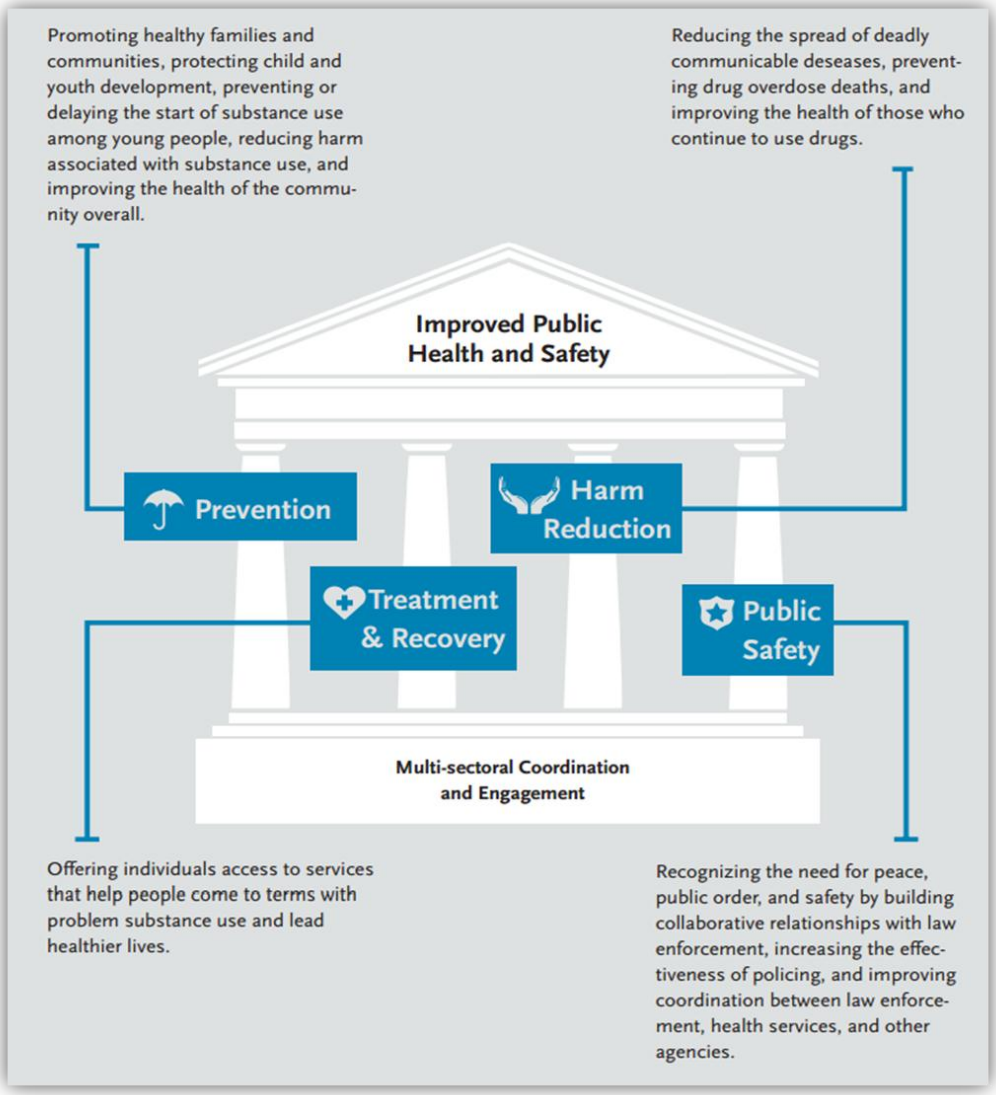
"Prevention"[22]

1. **Primary Prevention**: attempts to prevent substance use altogether or delay the onset of substance use.
2. **Secondary Prevention**: addresses the early stages of substance misuse before serious problems have developed.
   (Identify and treat asymptomatic persons who have already developed risk factors or pre-clinical disease but in whom the condition is not clinically apparent)
3. **Tertiary Prevention**: focuses on preventing serious harm to individuals who have become addicted to drugs.
   (Care of established disease, with attempts made to restore to highest function, and minimize the negative effects of disease)

n.b. Many interventions within the areas of secondary and tertiary prevention can also be referred to as Harm Reduction.

The Four Pillars approach to combating substance abuse can be summarized graphically as follows:

Figure 1. Four Pillars Model to Promote Improved Public Health and Safety



Source: MacPherson, D. (2001). A Framework for Action: A Four-Pillar Approach to Drug Problems in Vancouver (Revised).[2]

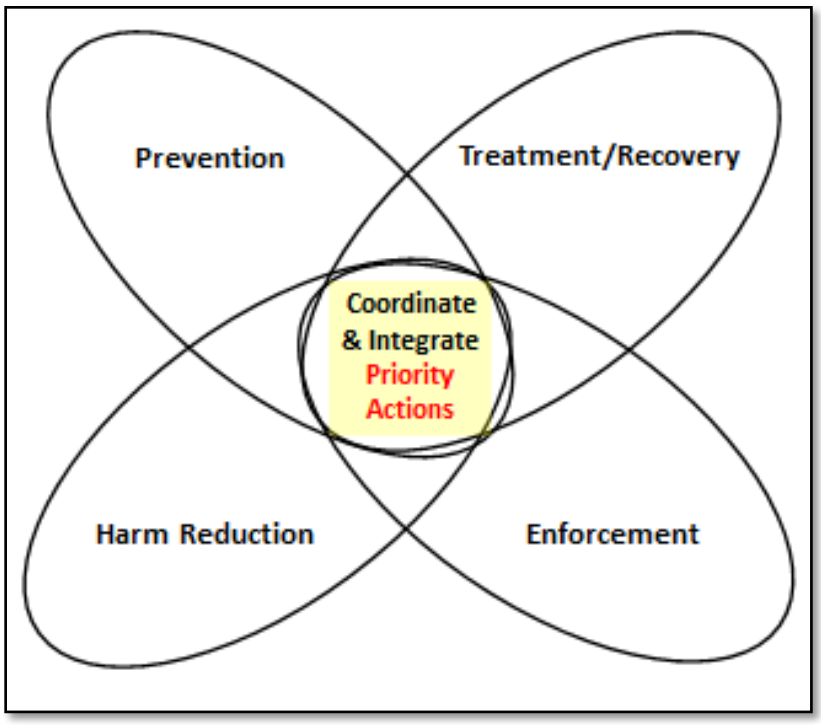
Given the broad analytic scope of this report it should be noted that the data and cost information come from a variety of sources which generally refer to the period 2010 - 2013.

Great care has been taken here to note the sources and years of data used. When possible, cost information was extrapolated forward to a reference year of 2013 due to the fact that it is the most recent year for which both epidemiological and cost data are largely complete.

The data gathering and analytic work for this analysis took place between May 2014 and February 2015.

This analysis and report provides the RSAC with the means to begin prioritizing and planning its approach to combating substance abuse within the Cape Community. As shown graphically in Figure 2, doing so will require identifying and then integrating "Priority Actions" based (in part) on the report's findings in the four domains.

Figure 2. Intersection of Four Pillars Domains Suggests Priority Actions



Source: V. Harik

Statewide Context of Substance Abuse

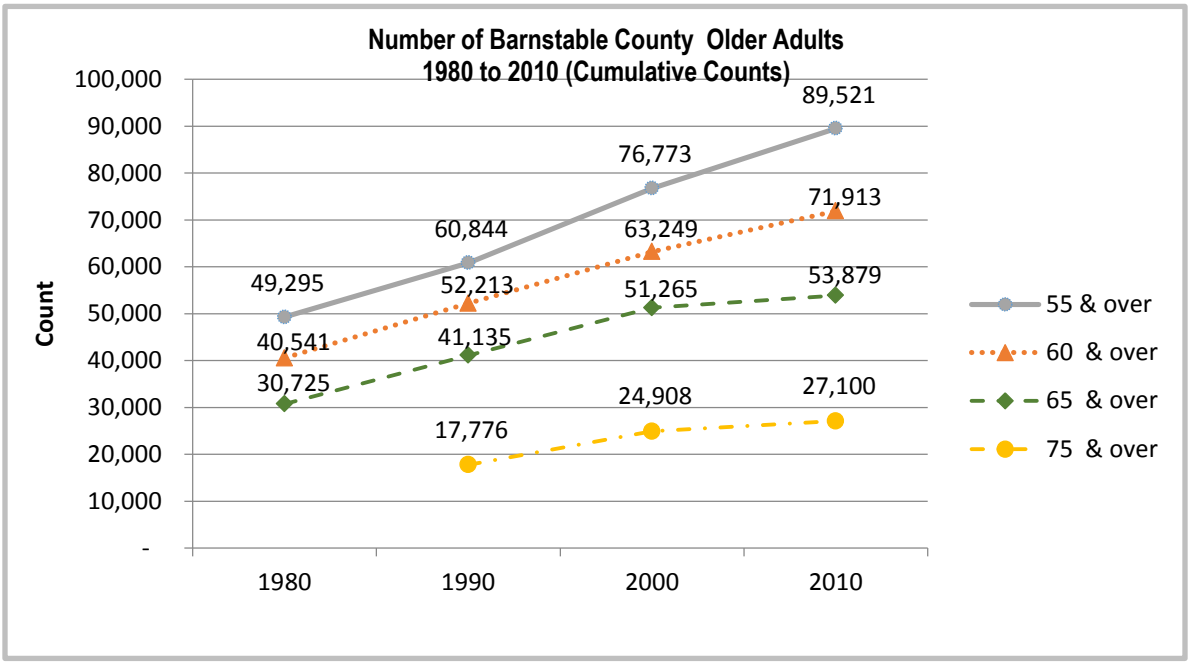
Adults

Research shows that the demographic at highest risk for drug abuse, addiction, overdose, and death is persons age 18-44. On Cape Cod 26% of population falls within this age range vs. 38% of the Massachusetts population[7]. However, Barnstable County's age-adjusted rates (per 100,000 residents) of adult alcohol addiction, drug addiction, accidental overdose, and deaths do not differ substantially from those of Massachusetts.

Older Adults

Cape Cod is home to a disproportionately large population of older adults (age 65+), 25%, when compared to Massachusetts (14%) and indeed the nation (13%).[7] This feature has the potential to impact the community's planning and implementation of region-wide substance abuse prevention and treatment interventions, at present and into the future, due to the fact that the rates of increase in the population bands that will be aging into the 65+ cohort (namely 55+ and 60+) are relatively high (see Table 1). Specifically, in 2010 the population band aged 55-64 was the single largest in Barnstable County, representing 16.5% of the population.

Table 1. Number of Barnstable County Older Adults, 1980 - 2010[7]



Nationwide, research shows that the prevalence of alcohol and drug abuse and dependence is the lowest amongst persons age 50 and older in the US population.[23] Year 2001 data from substance abuse treatment programs (all payors) show that over 75% of admissions for patients age 50+ were for alcoholism, followed by heroin/prescription opioids (14%).[23] By 2005 a clear upward trend in admissions for abuse of drugs (largely heroin/prescription opioids, 17%, and cocaine 8.5%) was observed while alcohol abuse, as the primary reason for admission, began a drift downward (69%).[13] These trends have continued and are applicable in Barnstable County.

The total population of Barnstable County is expected to fall at a slow but steady rate over the coming 20 years, from 215,888 in 2010 to approximately 210,000 by 2030.[24] Consequently, the percentage of older adults is projected to increase significantly during this time period as the Baby Boomer generation continues to age into the 65+ cohort, and therefore the absolute number of people over the age of 65 who are abusing alcohol and drugs is expected to rise.

Youth

Barnstable County youth are at risk for developing substance dependence during their high school years. The most recent data available come from 2012-2013 surveys of youth risk behaviors (one statewide survey, and two community surveys).[v] In the two towns that completed community surveys, Barnstable County high school students self-reported substance-related behaviors[8,25] at rates that are generally equivalent to their state-wide peers for the activities of lifetime (i.e. "ever used") and current alcohol use (approximately 66% and 35% respectively), lifetime marijuana use (approximately 40%), lifetime heroin use (1%), and lifetime cocaine and ecstasy use (5%).

It appears that current marijuana use amongst Cape Cod high school students, current binge drinking, and lifetime over-the-counter (OTC) drug use to get high could be higher than statewide rates. However, additional survey data from a representative sample of high school students Cape-wide would be needed to render conclusive judgment.

[v] Note that the communities of Sandwich and Falmouth are in no way being singled out. These communities' survey information is the most recent available.

It is important to note that in one of the Cape Cod communities surveyed (Falmouth) a community-wide 5-year substance abuse prevention program was very successful in bringing its youth use rates down.[26, vi] Their experience offers important insight into ways that their program and outcomes could be replicated Cape-wide.

2. METHODS

2.a. Epidemiological Analysis--Methods

Substance use and abuse is a complex issue across the lifespan, and involves a broad societal reach. To fully understand the issue we undertook an indicator development process following the Substance Abuse and Mental Health Services Administration's (SAMHSA) Four Pillar approach targeting the domains of harm reduction, prevention, law enforcement, and treatment/recovery domains. A literature review of peer-reviewed and published report sources gave us a list of indicators for which our analysis would need data.[27-31]

Description of Data Sources

Data from a variety of sources were utilized to provide a view of the current situation of substance use and abuse in Barnstable County. Sources include: national and state-administered behavioral surveys (e.g., Behavioral Risk Factor Surveillance Survey, Youth Risk Behavior Surveillance Survey, MA Youth Survey), the U.S. Census and associated community surveys, federal data (e.g., traffic safety administration, FBI), vital records, and hospital discharge databases, among others. A full description of each data source can be found in Appendix D. It is important to note that this report is a compilation of aggregated data from analyses conducted by the agencies which administered the surveys or otherwise collected the information. All data compiled for this report are from the same 5 year period (2010-2014). Efforts were made to obtain the most recent data from all sources.

[vi] Sandwich Substance Abuse Task Force. Meeting Minutes of 12/16/2013: **Presentation from the Falmouth Prevention Partnership**. Sandwich, MA. 2013.

Criteria for Selection

To create a meaningful report it was first important to establish a set of criteria for selection of the indicators to be included. Indicators that were relevant and timely, with good availability and reliability were sought.

•Relevance: All indicators presented in this report are either directly related to substance abuse, or are evidence-based protective or contributing factors.

•Timeliness: Data included are as recent as possible; older data have been included for comparison in trends over time where available.

•Availability and Reliability: Data needed to be consistently available, and reliable, i.e. comparable from year to year. Many of the indicators therefore came from national surveys conducted at regular intervals, or consistently reported data. In certain instances, data were not available for the local level of Barnstable County; where this is the case, Massachusetts data are included.

2.b. Cost Analysis--Methods

As with the Epidemiological methods describe above, a literature review of peer-reviewed and published report sources provided a list of indicators necessary to conduct cost analyses.

Conservative unit cost estimates[32] were produced using data from the following sources:

- Key informant interviews and data requests from local agencies and individuals (see section 2.c.)
- Publically available local and state budgets and annual reports.
- State and national average costs of specified services

In this analysis a Cost-of-Illness[19] approach was combined with basic cost allocation to estimate the expenditures attributable to substance abuse for agencies and participants in four domains of the sector. It is important to note that the costing work presented here assumes a 15% margin of error, which the RSAC members have agreed is adequate to provide baseline

information that is actionable by the Council. In other words, we recognize that since available data can cross multiple years and can be inconsistently available the substance abuse-related costs that we report are, at best, estimates. They will not be accurate to the penny. However, the belief is that they will represent an order of magnitude that will be important to and sufficient for prioritization of actions by the RSAC.

The cost analysis allocates identified service costs by domain (Harm Reduction, Prevention, Law Enforcement, Treatment/Recovery) and by the main substances abused on Cape Cod (Alcohol, Opiates/Opioids, Marijuana, Other Drugs).

To our knowledge this is an innovative approach to capturing and presenting a community's substance abuse problem for a particular period of time (1 year—2013).

At its most basic, the analytic matrix can be summarized graphically as follows:

Table 2. Outline of Analytic Matrix

SUMMARY OF COSTS SUBSTANCE ABUSE-RELATED ACTIVITIES IN BARNSTABLE COUNTY	----------**DIRECT COSTS**----------				
DOMAIN	**Total by Domain**	**Sub-Total Alcohol**	**Sub-Total Heroin/Opiates**	**Sub-Total Marijuana**	**Sub-Total Other Drug**
HARMS REDUCTION					
PREVENTION					
LAW ENFORCEMENT					
TREATMENT & RECOVERY					
Total Estimated Cost of Substance Abuse on Cape Cod					

Note that Table 2 above refers to "**direct costs**". Simply put, these are costs that are identifiable as being expended as a result of addressing substance abuse on Cape Cod.

Additional cost information of interest to the RSAC is the **"external cost"** of substance abuse. The external costs of substance abuse include those that impact the local community and

economic environment in various ways (for example: lost worker productivity, victimization from crime).

It is beyond the scope of the current analysis to estimate the external costs of substance abuse at the same level of detail that direct costs were estimated. Section 3.c. of this report includes a general estimate of external costs that makes use of proportions found in the peer-reviewed literature.

The private cost + external cost equals the total **social cost** of substance abuse.[18]

2.c. Environmental Scan--Methods

Key Informant Interviews

As part of a comprehensive environmental scan undertaken by the Department to identify resources and identify gaps in service delivery, a series of key informant interviews were conducted from May 2014 to February 2015. Key informant interviews are qualitative, in-depth interviews of people who have specific knowledge about the topic of substance abuse and related issues in Barnstable County. Representatives from major sectors, including harm reduction, treatment, schools, law enforcement, youth, and people in recovery were identified and included as key informants. The number of individuals interviewed was expanded based on recommendations from initial key informants and members of the Barnstable County Regional Substance Abuse Council. Interview questions varied depending upon the subject expertise of each key informant, but all were asked for their opinion on regional recommendations. At the end of each interview, a 1-2 page interview summary was created that helped to identify themes, issues, and recommendations.

Resource Inventory

A resource inventory of substance abuse-related services in Barnstable County was conductedto identify the specific needs of this community. The protocol for inclusion of substance abuse sector resources was determined prior to data collection and only those resources that were directly related to substance abuse were considered for inclusion.

However, it is acknowledged that there are a number of organizations that, though they are not directly serving substance abuse-related needs, are having tangential effects on substance abuse in Barnstable County. Many of these are prevention-focused services, whose benefits are multifaceted. This resource inventory also does not fully represent the resources that are available to Barnstable County citizens that are located in other areas of the state or country.

As with the other portions of this analysis, the data collected were organized using a public health framework. Organizations were categorized by their main focus under prevention, harm reduction, treatment/recovery, and law enforcement. Services or organizations that had clearly differentiated departments that fit into different categories under the Four Pillars Approach were recorded in this way in the resource inventory. The resources that were gathered in this inventory were also used in a mapping exercise in order to view the potential geographic influences on service availability (see Figure 3 and Appendix C).

Data were initially collected using internet and database searches. The list was expanded through formal and informal interviews with key informants and experts in the field. The completed inventory of resources was distributed to all RSAC members, and their final input was included.

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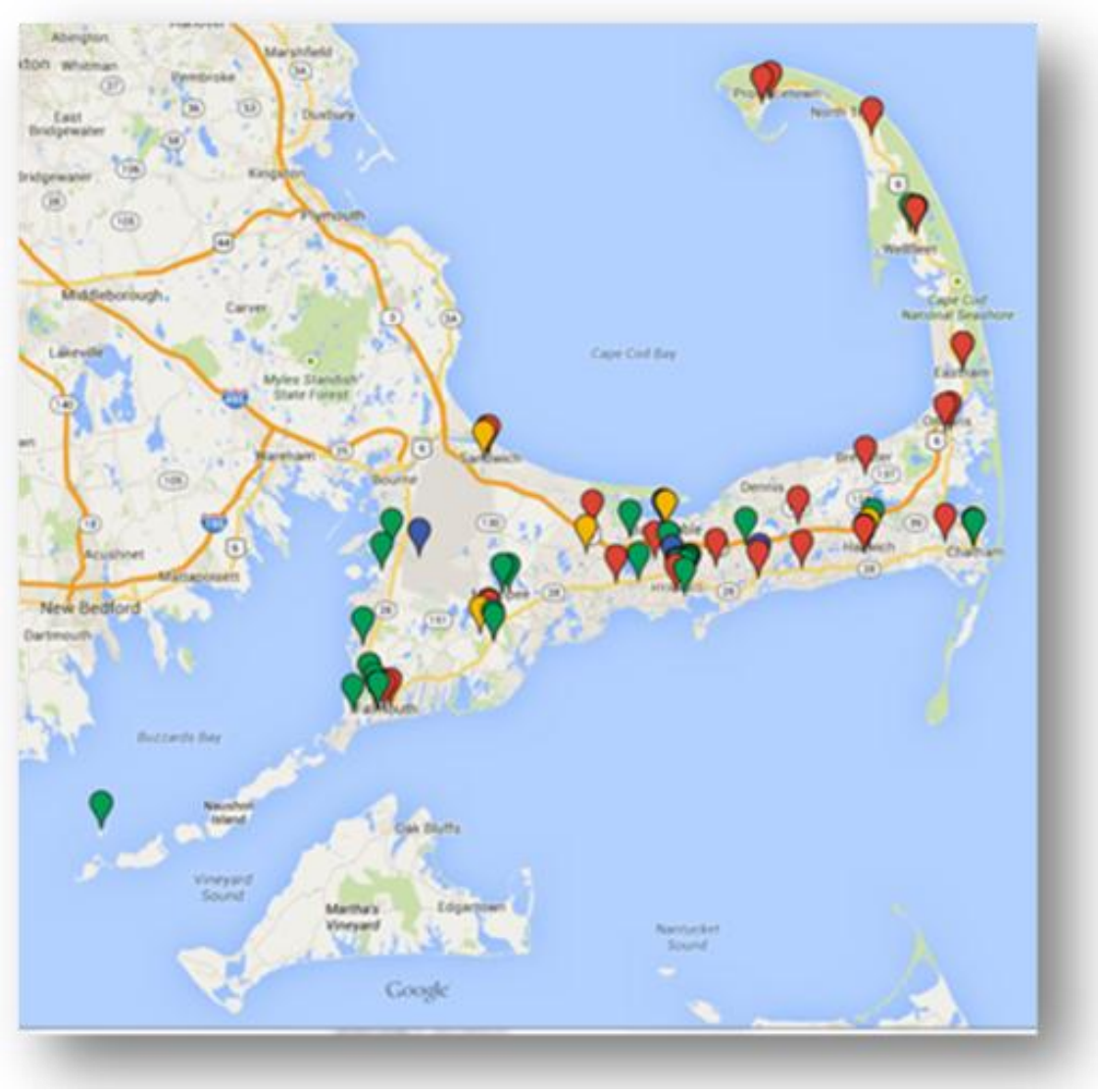
Figure 3. Barnstable County Substance Abuse Services Resource Map



Green pins mark harm reduction activity locations.

Yellow pins mark prevention activity locations.

Blue pins mark law enforcement activity and service locations.

Red pins denote treatment and recovery activity and service locations.

2.d. Methodological Limitations

Many of the indicators included in these analyses are limited by the data collection methodology. It is important for readers to be aware of the specific source populations of each of the indicators and the potential biases possible. For example, the majority of data on consumption were obtained from self-reported behaviors from large nationally-representative surveys. It is possible that over or under-reporting may have occurred due to survey administration method, perceived desirability of the behavior in question, as well as the socio-demographics of each respondent. Arrest data, crime data and hospital discharges should not be considered comprehensive of all relevant incidents, as not all behaviors or outcomes come into contact with the law or seek medical treatment.

Some costing data in this report are based on national and state averages, and may not be consistent across indicators (i.e., inclusion of different cost domains). Within estimates that used attributable fractions (e.g., crime, morbidity, mortality, and motor vehicle accidents), it is important to note that double-counting may be a concern due to concurrent diagnoses and behaviors. Due to difficulty in accessing certain data at the county level, some of the indicators in this report are based heavily on national or state-level data. Finally, the data user should not consider any one indicator to be representative of the situation of substance abuse in Barnstable County; it is important to consider all the indicators together as presenting an overall picture.

3. FINDINGS

a. Epidemiological Findings, by Substance
b. Cost Analysis, by Domain
c. External Costs
d. Environmental Scan

Table 3. Summary of Estimated Annual Morbidity and Mortality Due to Substance Dependence in Barnstable County, 2013.

Summary of Estimated Annual Morbidity, and Mortality Due to Substance Dependence in Barnstable County

	CONSEQUENCES OF ABUSE						
Barnstable County Pop. (2013) =	Morbidity (Existing Cases)		Morbidity (New Cases)		Mortality		
215,990	Prevalence, 1a.	Prevalence, 1b.	Incidence, 2a.	Incidence, 2b.	Mortality, 1	Mortality, 2	Mortality, 3
SUBSTANCE CONSUMED	RATE of Dependence (Addiction) in Cape Pop.	NUMBER of Persons Dependent (@ point in time)	RATE of Increase in Dependent Pop. on Cape	NUMBER of New Cases (per year)	PERCENT of Dependents that Die due to Substance Abuse (per year)	NUMBER of Substance Abuse-Related Deaths (per year)	PERCENT of Substance Abuse-Related Deaths
Alcohol [*, ****]	7.9%	17,063	1.0%	179	0.79%	135	71%
Heroin + Opioids [*]	3.1%	5,691	6.5%	370	0.47%	27	14%
Marijuana [**, ****]	1.3%	2,715	Pending	Pending	0%	0	0%
Other Drug [*, v] (e.g. Cocaine, Sedatives, Anti-Depr/ Anti-Psychot./Convulsant, Unspecified, Other)	3.1%	5,691	Pending	Pending	0.47%	27	14%
Total		31,161		Pending		189	100%
Dependence (or "Abuse", "Addiction") = Hospitalized for, treated for, arrested for, incarcerated for, self-admitted problem, died from use of substance.					Percent of Total Barnstable County Deaths (All Causes), N =2,796; 2011***	7%	

Sources:
* Mass. Health Council (2014). Common Health for the Commonwealth: MA Report on the Peventable Determinants of Health, p. 54. (Alcohol addiction @ 7.5% in MA)
** Stein, C. (2013). In Focus: The Demographic and Socioecnomic Landscape of Barnstable County, p. 10.
*** Paul Oppedisano, Director, MassCHIP. 10/7/2014.
****SAHMSA, 2012 (Alcohol addict. @ 8.3% in MA)
v Multiple Sources

Sources: [7,9,10,33,34]

Table 4. Drug and Alcohol-Related Mortality for Barnstable County, by Category, 2002-2011

	Total Deaths (2002-2011)	**Avg. Mortality Rate** per 100,000 Pop. Per Year
Alcohol-Related	**1,368**	**63**
Direct Causes	*248*	11
Indirect Causes	*756*	35
Unintentional Injuries	*274*	13
Intentional Injuries	*90*	4
Drug-Related	**539**	**25**
Direct Causes	*367*	17
Indirect Causes	*34*	2
Unintentional Injuries	*20*	1
Intentional Injuries	*118*	5
Total	**1,907**	**88**

Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Compressed Mortality File 1999-2011[35]; Census Bureau, 2010 Census of Population, Public Law 94-171 Redistricting Data file.[36]

3.a. Epidemiological Findings, by Substance

Alcohol

Table 3 shows that alcohol addiction afflicts more Barnstable County residents (17,063) than does addiction to all other substances combined. Indeed, Massachusetts estimates of alcohol addiction range from 7.5% to 8.3% of the population; for this analysis the mid-point (7.9%) of the two estimates was used in order to estimate the number of Cape Cod residents that are dependent upon alcohol (17,000). The percentage and number would be slightly higher (8.7%) if children under the age of 15 (pre-high school age) were eliminated from the analysis.

It is important here to distinguish between regular use of alcohol versus dependence ("addiction"). The Massachusetts Behavioral Risk Factor Surveillance System (MA BRFSS, 2012) survey and the Massachusetts Youth Risk Behavior Survey (MYRBS, 2013) respectively show regular alcohol use rates of 69% for adults (age 18+) and 36% for high school-age children. Applying this information to Barnstable County results in the finding that approximately 126,000 adults (age 18+) and 3,900 high-school children on Cape Cod use alcohol regularly.

Previous research estimates that approximately 12% of these alcohol users become addicted.[10,34]

While the prevalence of alcohol use is widespread, the incidence (rate of increase new cases) of alcohol addiction is relatively flat[9], with approximately 179 new cases appearing per year.

Annual deaths attributable to alcohol dependency in Barnstable County are estimated to be 135 per year for the period 2002-2011. Applying that same number forward allows for further estimation that alcohol-related deaths accounted for fully 75% (135 of 181) of all substance abuse-related deaths on Cape Cod in 2013.

Heroin and Opioids

Current figures on prevalence and incidence of heroin/prescription opioid use on Cape Cod are difficult to come by due to the rapid increase in the number of new cases over the past 18 months. This may sound counter-intuitive. Why is this so?

State and local data show a significant increase in admissions for heroin use since 2011 and a related decrease in use of all other opioids.[37,38] The broadly-held opinion amongst key informants is that increased scrutiny of prescribing practices has reduced the supply of opioids on the street, and thus increased demand for heroin during the same period. However, it cannot be assumed that these admissions statistics and rates fully reflect the absolute number of dependent persons since not all users will necessarily be seeking treatment and since the number of beds available for treatment does not necessarily meet treatment demand. Additionally, rapid increases in number of overdoses and deaths due to heroin and/or prescription opioid overdose cannot be taken to fully reflect the scope of the problem, since work has not yet been done to differentiate between deaths due to the increased number of users and deaths due to more lethal product concentration or mixture being consumed. What is known is that the number of heroin users is increasing, and so are the number of overdoses and deaths, both state and county-wide.

The Massachusetts Health Council, in its 2014 report entitled "Common Health for the Commonwealth"[9] reports that 3.1% of the MA population over the age of 12 is dependent upon

drugs. From other sources we learn that the percentage increase in heroin dependence per year ranges from 3% to 10%. Note that 10% is the reported increase in deaths from drug overdose in MA [D. Patrick, 3/27/14 Opioid Emergency Declaration].[39] Thus it is estimated that nearly 5,700 residents of Barnstable County were addicted to heroin or prescription opioids in 2013. The mid-point of the 3%-10% range, 6.5%, was selected to estimate the rate of increase of addiction, which yields an estimate of 435 new cases of addiction per year.

The estimate of deaths attributable to heroin/prescription opioid use in 2013 is hampered by the standard lag of approximately 1.5 years in the availability of mortality data from state sources. The mortality data included in the present analysis is from the year 2012. Thus, given the observed spike in heroin use and overdoses since 2011 it is likely that this report underestimates heroin/prescription opioid morbidity and mortality.

Using the rates shown in Table 4, deaths attributable to "drug dependency" are estimated at 54 per year during the period 2002-2011. Lacking more specific information that would allow for the allocation of these deaths between heroin/prescription opioid use versus Other Drugs, they were divided equally, thus allocating 27 deaths to each, and then applying that number to 2013. Again, given the preceding discussion, it is recognized that this very likely under-estimates deaths from heroin/prescription opioid use in Barnstable County in 2013 given the dramatic year over year increased in mortality from this source.

Recently-released information on opioid poisoning deaths by the MDPH Registry of Vital Records and Statistics (December 2014)[40,41] provides information for Table 5, below. Based upon the estimates provided in this document, on a population percentage basis Barnstable County's share could have been 33 deaths in 2013, and 45 in 2014.

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Table 5. Estimated Fatal Opioid-Related Overdoses Among Massachusetts and Barnstable County Residents, 2012 – 2014.

Year	Total MA Deaths from Opioids[iii]	Rate per 100,000 Pop.	Estimated Opioid-Related Deaths in Barnstable County[ii]
2012	711	10.6	23
2013	1,023	15.3	33
2014[i]	Pending	20.8[iv]	45[v]

[i]Based upon information from the Barnstable County District Attorney, 2/6/15 (reported in Barnstable Patriot by N. Hoffenberg).[42]

[ii] Estimated population of Barnstable County = 215,990 in 2013 *(Source: Census.gov).*

[iii]*Source: MADPH, "Data Brief: Fatal Opioid-Related Overdoses Among MA Residents". December 2014.*[41]

[iv]*Calculated from Estimated Deaths.*

[v] *Source: M. O'Keefe, DA for Cape & Islands, 2/11/2015.*[43]

Marijuana

The MA Behavioral Risk Factor Surveillance System survey among adults (age 18+) (MA BRFSS, 2012)[44] and the Massachusetts Youth Risk Behavior Survey (MYRBS, 2013)[8] show regular marijuana use rates of 9% for adults (age 18+) and 28% for high school-age children. This apparent contradiction can be resolved with a closer look at the age groupings amongst adult marijuana users. Rates of past month marijuana use among adults age 18-25 are 41% in Massachusetts. The 9% rate just cited encompasses the entire adult population age 18 and over. Thus, approximately 27,000 adults (age 18+) and 3,000 children (17 and under) on Cape Cod use marijuana regularly. Approximately 9% of users become addicted.[10]

Information on rates of increase in marijuana use, and estimates of new users per year is not available.

This analysis does not show any deaths specifically attributable to marijuana use. However, the data could be missing accidental deaths that, if fully investigated, could yield partial or full attribution to marijuana use.

Although marijuana use does not attract attention due to its lack of direct effects on mortality and (as we will see) cost figures, this substance is identified in its own category due to its important role as a "gateway substance" to hard drug use[45,46] when abused by children (17 and under) (the other acknowledged gateway substance is alcohol). This important information is especially provided to the RSAC for prevention planning purposes.

Other Drugs

The Other Drugs category ofthe analysis consists of an array of drugs that are not otherwise categorized above; it includes: cocaine (which has low incidence and prevalence), tranquilizers, anti-depressives/psychotics/convulsants, and "other drugs".[47]

As with heroin/prescription opioids additional information is not available for this "catch-all" category. The information from the previously-cited Massachusetts Health Council's 2014 report[9] was applied with findings that3.1% of the MA population over the age of 12 is dependent upon drugs. This yields an estimated prevalence of approximately 5,700 persons on Cape Cod who are dependent upon other addictive substances.

Information on rates of increase in Other Drug use, and estimates of new users per year were not available.

From the rate shown in Table 4, deaths attributable to "drug dependency" numbered 54 per year during the period 2002-2011. Lacking more specific information that would allow separation of those deaths into heroin/prescription opioid use versus Other Drugs, we divide them equally, thus allocating 27 deaths to each, and then applying that number to 2013.

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Summary of Epidemiological Findings for Barnstable County

- Alcohol dependence is an endemic problem.
- Heroin/Opioid dependence is an epidemic problem in "outbreak" status.[vii]
- With regard to Table 3, mortality attributable to "Alcohol Dependence" (estimated to be 0.80% of dependents) and "Drug Dependence" (estimated to be 0.90% of dependents) appeared to be roughly equal in 2013 when viewed as a percentage of total dependent persons. In other words, once you are addicted to alcohol or drugs it appears that the two were equally lethal in the year 2013. However, an accelerating mortality rate from heroin and prescription opioid overdoses from 2013 through 2014 suggests that deaths attributable to this cause are accelerating at a much higher rate than deaths attributable to alcohol.
- Marijuana use, although virtually non-lethal, is important to consider in the RSAC's deliberations since it, along with alcohol, is a gateway substance to the use of harder drugs.

[vii] **Endemic**: A disease native to a people or region, or which is regularly or constantly found among a people or specific region. **Epidemic**: The occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time.

3.b. Cost Analysis Findings, by Domain

The total Direct Costs of substance abuse to the Cape Cod community are estimated to be approximately $110 million.

Note that while the figures in the tables that follow, and elsewhere in this document, appear to be calculated to the dollar they should always be interpreted as estimates only. When practical, figures presented are rounded to the nearest 1,000 or multiples thereof. Additionally, the word "pending" has been inserted to indicate that further costing work is needed.

Appendix B (Indicators by Domain) contains details of this analysis for reference purposes and discusses the methodological approaches taken to compile these findings

Table 6. Summary of Costs of Substance Abuse-Related Activities in Barnstable County

SUMMARY OF COSTS SUBSTANCE ABUSE-RELATED ACTIVITIES IN BARNSTABLE COUNTY	----------DIRECT COSTS----------					
DOMAIN	Total by Domain	Percent of Total	Sub-Total Alcohol	Sub-Total Heroin/Opiates	Sub-Total Marijuana	Sub-Total Other Drug
HARMS REDUCTION	$ 707,000	0.6%	$79,000	$615,000	$13,000	Pending
PREVENTION	$1,010,000	0.9%	$566,000	$303,000	$141,000	Pending
LAW ENFORCEMENT	$56,900,000	51.7%	$23,500,000	$33,400,000	Pending	Pending
TREATMENT & RECOVERY	$51,467,000	46.8%	$23,030,000	$23,596,000	$751,000	$4,090,000
Total Estimated Cost of Substance Abuse on Cape Cod	$110,084,000	100.0%	$47,175,000	$57,914,000	$905,000	$4,090,000
		Percent of Total	43%	53%	1%	4%

Harm Reduction

Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use for both the dependent individual and the community. Examples include needle exchange programs, community policing, and distribution of Narcan (naloxone hydrochloride) to reverse opioid overdose.

The 2013 cost of these activities was approximately $700,000, with over 85% of that cost attributable to reducing the harm associated with heroin/prescription opioid use.

The analysis of harm reduction activities in Barnstable County includes the following:

1. Collection and disposal of excess prescription drugs by local police departments
2. Community-based syringe and needle exchange programs
3. Community-based syringe and needle disposal programs
4. Proactive law enforcement—community policing.
5. Blood borne pathogen training of public workers, and monitoring of public places for substance abuse-related waste
6. Programming to provide education to first responders and community and to provide naloxone (Narcan) to prevent opioid overdose.

In spite of the protective effects of these activities in the midst of a broadly acknowledged epidemic of heroin/prescription opioid use, investment in harm reducing activities is extremely low. The costs of these services are estimated comprise only six-tenths of one percent (0.6%) of the total estimated direct costs of substance abuse on Cape Cod.

Prevention

Substance abuse prevention activities also receive very little funding on Cape Cod, approximately $1 million per year (see Table 7), or approximately 0.9% of total direct costs (Table 6).

Table 7. Substance Abuse Prevention—Youth and Adult Focused

Indicator P1, Substance Abuse Prevention, Youth and Adult Focused			
Substance	**Youth**	**Adult**	**Total**
Alcohol	$482,532	$83,076	$565,608
Heroin/Opioids	$258,499	$44,505	$303,004
Marijuana	$120,633	$20,769	$141,402
	$861,665	**$148,350**	**$1,010,015**
	85%	**15%**	

This analysis suggests that the majority the funding that is received (85%) supports prevention of activities that are directed at youth.

Throughout Barnstable County 12 coalitions, non-profit agencies, and local government entities were identified as working in the drug abuse prevention area (see Appendix B, Indicator P1). It remains to be seen if the variety of prevention activities in the community is evidence-based

and effective in supporting youth to avoid experimentation and use of illegal substances. As such, there may be opportunities to plan and seek funding for a Cape-wide unified substance abuse prevention effort.

Law Enforcement

Law enforcement activities account for approximately one-half of all substance abuse-related costs in Barnstable County.

Table 8. Summary of Substance Abuse-Related Criminal Justice System Costs

Indicator LE0: Summary of Substance Abuse Related Criminal Justice System Costs					
SUMMARY	As of 1/1/2015				
Sector	Total Cost	Alcohol Attributed	Heroin/Opioid Attributed	Marijuana Attributed	Other Drug Attributed
Police	$26,939,111	$9,428,689	$17,510,422	Pending	Pending
Courts	$13,184,811	$6,178,026	$7,006,785	Pending	Pending
Sheriff--Jail	$15,052,063	$7,052,967	$7,999,096	Pending	Pending
Sheriff--Other	$1,529,681	$716,765	$812,916	Pending	Pending
Total	**$56,705,665**	**$23,376,446**	**$33,329,219**		

Barnstable County's estimated substance abuse-related costs of the criminal justice system include:

- The 15 police departments in Barnstable County,
- The Barnstable County Sheriff's Office (includes Barnstable County House of Corrections)
- The state and local judiciary, including Public Counsel, Trial Court, Superior Court, District Court, Juvenile Court, Probation, Community Corrections, and District Attorney.

Law enforcement entities are meaningfully involved in each of the four domains articulated in this report. For example, within the Harm Reduction domain the Town of Barnstable Police Department operates its Community Policing Unit, and it is highly likely that the policing activities of the 14 other town police departments also perform harm reducing activities during

the course of their duties. Within the Prevention Domain both the Barnsttable County Sheriff's Office and the Barnstable County District Attorney's Office offer programs for youth that are intended to prevent substance abuse and its related criminal offenses. Within the Treatment and Recovery domain the Barnstable County House of Corrections's health and counseling services address the needs of substance dependent incarcerated individuals and participate in "release planning" following their incarceration.[48]

Additional work is needed to learn more about the law enforcement costs associated with marijuana and other drugs.

Treatment & Recovery

Treatment and recovery costs are estimated to account for 47% of total direct costs, or $51.5 million. These costs are associated with the clinical care and psychological rehabilitation of substance abusing patients. Note that the costing of this domain also includes the estimated costs of the "Recovery Community"[28] [viii] on Cape Cod (which includes mutual-support groups and Sober Homes). Table 9presents the treatment and recovery cost findings, summarized by type.

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[viii] http://www.facesandvoicesofrecovery.org/who/history

Table 9. Estimate of Substance Abuse Treatment and Recovery Costs, Inpatient and Outpatient, 2013

Estimate of Substance Abuse Treatment and Recovery Costs, Inpatient and Outpatient, 2013						
(From Locally Sourced Data)						
			Attribution to Substance: Percentages & Costs			
Treatment Type (Modality)		**Estimated Cost**	**Alcohol**	**Heroin/ Opioids**	**Marijuana**	**Other Drug**
Inpatient Treatment	**Detox + Hospitalization + Residential Treatment**	**$29,623,832**	**$15,764,449**	**$10,246,022**	**$597,981**	**$3,015,380**
Outpatient Treatment	**OBOT + Vivitrol + Methadone + Counseling**	**$15,102,900**	**$3,523,200**	**$11,579,700**	Pending	Pending
Emergency Department	**Emergency Dept.**	**$3,428,469**	**$1,981,503**	**$495,606**	**$112,650**	**$838,710**
EMS Transport to Hospital	**Emergency Transport**	**$1,156,072**	**$663,320**	**$216,053**	**$40,936**	**$235,763**
Recovery Community	**Self-Help Meetings + Sober Homes**	**$2,156,318**	**$1,097,480**	**$1,058,838**	Pending	Pending
Total Estimated Expediture in Barn. County for Substance Abuse Treatment and Recovery		**$51,467,591**	**$23,029,952**	**$23,596,219**	**$751,567**	**$4,089,853**
			45%	**46%**	**1%**	**8%**
			Alcohol	**Heroin/ Opioids**	**Marijuana**	**Other Drug**
Sources and Linked Sheets:						
South Bay: Interview, 10/7/14						
Gosnold: Sub-sheet in P1, Prevention--Youth-Focused and Adult Focused Costs.xlsx						
Cape Cod HealthCare: Revised Direct by Substance Consumed_Rev6, VH Analysis 12-18-14.xlsx						
* Methadone and OBOT/MAT Treatment: Sub-sheet in this workbook = TR4_Tx_MAT_Cost						

Note that private mental health counselors' costs attributable to counseling clients for substance abuse-related problems are not included in this analysis at this time.

Further work is needed to learn more about the outpatient treatment costs and the recovery community costs associated with marijuana and other drugs.

3.c. External Costs—Preliminary Findings

An important component of the impact of substance abuse on a community is that of the external burdens and expenses. Lost economic productivity costs are usually employed in these calculations. Additional features of external costs include a process of establishing the monetary value of reduction in quality of life and other qualitative indicators. Such qualitative factors are beyond the scope of the present analysis.

The factors used to estimate local productivity costs are based on rates found in the peer-reviewed alcohol and drug abuse literature.

The most recent national estimate of the productivity costs associated with drug abuse come from the 2011 US Dept. of Justice's National Drug Threat Assessment "Economic Impact of Illicit Drug Use on American Society".[49] This report finds that productivity costs account for **62%** of all costs attributable to drug abuse.

With regard to alcohol abuse-related costs Sacks et al. (2006)[50] suggests that productivity costs account for **76%** of total alcohol abuse costs.

The straight average rate of the two is 69%.

Thus a rough estimate of the productivity costs for Barnstable County is calculated as follows:

Productivity Cost = (Direct Cost, $110,085,000/(1- 0.69) = **$355,113,000**

This figure provides only a starting point for estimating these costs. It suggests that for every $1 of direct cost there may be, conservatively, a further one to three and a half dollars ($3.50) of productivity costs associated with substance abuse in our community ($110 million to $355 million).

3.d. Environmental Scan—Findings

3.d.1. Harm Reduction

The main provider of harm reduction programs in Barnstable County is the AIDS Support Group of Cape Cod (ASGCC). The substance abuse harm reduction services at the ASGCC include opioid overdose education and prevention training through the use of nasal Narcan and HIV and Hepatitis C testing and counseling. The ASGCC also runs a needle exchange program, one of only six in Massachusetts. The Barnstable County Health Department assists the AIDS Support Group with this work.

In key informant interviews with prevention and education staff of the ASGCC, Hepatitis C testing was recognized as an important and underdeveloped area in substance abuse harm reduction. Informants cited low availability of rapid hepatitis C testing kits and high percentages of positive test results among the young injection drug using population as evidence of the need for more focus in this area.

Local police departments have a role in harm reduction in the form of proactive law enforcement engagement with high risk groups. Examples of this work include preventative measures such as high-visibility patrol and specialized units (i.e. Barnstable Police Department's Community Impact Unit). Key informants from this sector reported that not all police departments have the resources required to form specialized units in response to specific substance abuse needs, but they were recognized as a useful strategy in proactive law enforcement. In addition, prescription drug disposal kiosks or drop boxes are located in all police department lobbies, providing a safe and secure way for the public to dispose of unwanted and/or expired medications.

The impact of unused prescription medication and other medical waste such as discarded syringes was identified as an important community-focused harm reduction sector. The Cape Cod Cooperative Extension has worked in this area to provide public education about disposal of unused prescription medication and sharps. Syringe and needle disposal, however, continues to be a problem in the community, as reported by local police departments and

town public works departments. Opportunities for linkages between blood-borne pathogen training providers and public works employees/law enforcement were identified by key informants.

3.d.2. Law Enforcement

Law enforcement strategies for reduction of substance use and abuse involve many areas of the criminal justice system, including police, courts, and correctional facilities. Law enforcement involvement in substance abuse often occurs after the onset of dependent use of illicit or licit substances.

In addition to local policing by individual police departments in all 15 towns in Barnstable County, there are a number of ongoing collaborative efforts. The Cape Cod Drug Task Force is headed by the Massachusetts State Police, with participation from the District Attorney's Office, Sheriff's Department, all local police departments, and court officials. The Street Crimes Unit was organized by the Barnstable Police Department and works in collaboration with neighboring police departments. These groups focus the large majority of their effort on stopping the supply of illicit substances from entering and being sold in Barnstable County.

In key informant interviews with police officials from various towns, informants reported that between 50% and 85% of all of their calls for service were related to substance abuse. They noted that many arrests often relate to substance abuse, even if the charges were not violations of laws prohibiting the possession or distribution of illegal drugs. Interviewees reported that larceny and other similar charges are often related to the need for money to support continued use, and that domestic disputes often involve substance use, especially alcohol. Law enforcement key informants identified alcohol as the most common substance of abuse contributing to calls for service. Due to this, police officers find it difficult to distinguish how many of their calls for service were related to licit or illicit substance abuse.

Key informants in law enforcement identified a number of concerns regarding their work as it pertained to substance abuse, including treatment options and availability for those seeking voluntary help. There were a number of barriers noted, including insurance options, transportation, and legal barriers for police officers interacting with medical professionals,

treatment professionals, and public citizens. This perception of a lack of resources may also in part be due to unfamiliarity with the substance abuse treatment system. Though police officers, EMT, and other first responders are regularly in contact with people with substance use disorders, they may not be aware of what treatment options are available or how they seek them.

Outside of the regular judicial process in the courts, there are a number of specialty programs that focus on substance abuse. The District Attorney's office runs a juvenile and youthful diversion program that allows young and first time offenders an opportunity to not be prosecuted with criminal charges in exchange for their completion of appropriate services and treatment. This program also provides mental health and substance abuse assessment with referrals to further services when appropriate.

Barnstable County has one multijurisdictional adult Drug Court. The program serves up to 100 adult probationers out of the Barnstable, Falmouth, and Orleans District Courts. It is a treatment focused program for nonviolent offenders as an alternative to longer periods of incarceration. The program is not currently funded and is run through in-kind donations in time and services. It currently operates without case management or formal agreements with local treatment facilities.

There is one correctional facility in Barnstable County run by the Barnstable County Sheriff's Office. According to key informant interviews with Sheriff's Office staff, up to 80% of all offenders incarcerated at the correctional facility have been assessed as having a substance use disorder. The two most commonly abused substances are alcohol and heroin/prescription opioids. There are two major substance abuse treatment programs run by the Sheriff's Department that offer services to inmates: a Residential Substance Abuse Treatment program and a Vivitrol pilot program. Both of these programs have been nationally recognized and are currently undergoing research studies to support their efficacy. In addition to these services, the Sheriff's Department also coordinates and funds a re-entry planning team which collaborates with internal staff and outside agencies to provide ongoing

treatment services upon release. Services providers who participate in the reentry program include substance abuse treatment, mental health, and housing assistance.

3.d.3. Treatment & Recovery

There is a full spectrum of substance abuse treatment services available in Barnstable County. This includes detoxification, inpatient treatment, long-term residential, outpatient treatment, mutual support groups, and medically assisted treatment. The majority of these services are located in the mid and upper-Cape, in the towns of Falmouth and Barnstable. These services are also available regionally (outside of Barnstable County), with large clusters of services available in Plymouth, New Bedford, Fall River, and Boston.

The largest single provider of substance abuse treatment services in Barnstable County is Gosnold on Cape Cod. They provide at least one example of all of the services listed above, and run the only detoxification program in Barnstable County. In addition, they are also currently running a number of newer programs, including recovery coaches and counseling services in schools.

Medically assisted treatment options in Barnstable County include methadone maintenance, Suboxone or Subutex, and Vivitrol. Though key informants noted that medications are often a controversial topic, they were also recognized as an important element of many substance abuse treatment protocols. There are a number of options for medically assisted treatment, with community health centers taking a large role though Office Based Opioid Treatment (OBOT) programs. Many programs, including Duffy Health Centers and Outer Cape Health Services, are both currently expanding their patient capacity. A survey of the medically assisted treatment (MAT) providers in Barnstable County showed that some providers are at patient capacity and others have availability for more patient enrollments.

The majority of key informant interviewees in this sector identified the importance of a shift in way that substance use disorders and treatment are conceptualized. They noted the importance of recognizing substance abuse as a chronic medical condition, with a full spectrum of services including prevention, treatment, and long-term care management. Key

informants recognized the relationship between mental health and substance abuse, and reported that these treatment areas should have stronger cross-sectoral linkages.

In speaking to people outside of the treatment field, the need for more availability to treatment beds was often discussed. Key informants in the substance abuse treatment field, however, noted the need for a centralized system for substance abuse treatment referral options in order to help people navigate through the treatment services. Many of the key informants recognized that consumers of substance abuse treatment services are often unsure of the full spectrum of services available and are not properly matched to an appropriate level of care.

Recovery was identified by a number of key informants as an area in need of continued development. There are over 350 mutual support groups meeting regularly in Barnstable County, the majority of which are Alcoholics Anonymous and Narcotics Anonymous meetings. Although there are a large number of regular mutual support/aid meetings, a lack of formalized services and organizations for people in recovery, especially youth, was noted in key informants interviews. The value of a recovery high school in Barnstable County was identified by a number of key informants, especially in the field of education. Informants noted that although there has been large public attention to the problem of substance abuse, there has been little focus on more positive, hopeful messages of recovery.

3.d.4. Prevention

Prevention work in Barnstable County has been a largely undeveloped sector, in terms of both funding and practice. Though there have been a number of smaller groups that have formed around substance abuse prevention, few are formalized and funded. One of the most successful prevention groups in Barnstable County has been the Falmouth Substance Abuse Commission which was officially created in 1987 by Falmouth Town Meeting and has received town funding every year since. In 2008, the Commission was awarded a five year Drug Free Communities grant to implement the Substance Abuse and Mental Health Services Administration's (SAMHSA) strategic prevention framework. In 2009 the Commission formulated a community coalition called the Falmouth Prevention Partnership to implement a

number of evidence based practices and measure outcomes. Unfortunately, federal funding for this project was not renewed for a second five-year period. The Falmouth Prevention Partnership has since joined with the prevention department of Gosnold on Cape Cod and continues prevention work, including a number of public education campaigns.

Prevention groups in Barnstable County have been traditionally geographically bound to the single town in which they operate. This has also impeded the development of collaboration between substance abuse prevention groups. Key informant interviews in prevention groups agreed, as they were only sometimes aware of similar groups in other towns. These groups and organizations varied in structure, with some comprised of concerned community members, government officials, and the faith-based community.

One theme among these groups was a lack of awareness of evidence based practices that could be effectively used in prevention efforts. In key informant interviews with representatives of community coalitions, a need for better information on how the groups' resources can be best allocated was expressed. Key informants spoke about a need for clear information about what work their group could do to make the most positive impact.

A large portion of prevention planning and services include the school systems within Barnstable County. There are 16 School Resource Officers in the public schools in Barnstable County, largely in high schools. School Resource Officers perform a large array of duties varying between schools and police departments, including substance abuse education and policy enforcement. Individual school districts have also implemented specific policies and practices relating to substance abuse. In key informant interviews with school administrators, the need for better services for students seeking treatment or in recovery was identified. Administrators recognized the negative impact of substance abuse on school outcomes, and were interested in some of the options for students, including recovery high schools and expanded use of counselors in schools.

Prevention was recognized in the majority of key informant interviews as a sector in need of continued development. There are a number of organizations operating independently within various towns or schools which may benefit from sharing information. There is

currently a lack of regional organization around prevention work and implementation of evidence-based strategies that may be an area of interest for the Barnstable County Regional Substance Abuse Council.

3.d.5. Resource Mapping

As part of the comprehensive effort to inventory substance abuse resources in Barnstable County, a large amount of information was collected about the programs, services, and capabilities of over 100 local organizations. The inventory was organized by the public health domains of harm reduction, law enforcement, treatment/recovery, and prevention. The information was also mapped, and representatives of the Barnstable County Regional Substance Abuse Council were able to review both the inventory listings and a geographic mapping of resources.

This information was used not only to inform the analysis in this report, but was also used in order to populate a service directory and behavioral health web-based portal which was launched by the Barnstable County Human Services Department in late 2014. A full listing of the resources inventoried in the environmental scan can be seen in the attached appendix C or viewed as part of the Behavioral Health Portal and Service Directory through the Barnstable County Human Services website.

3.d.6. Gaps

A main goal of the environmental scan of substance abuse related resources in Barnstable County was to identify gaps in services in order to better consider the needs in the community. Gaps were identified both with the help of key informants and though analysis of the environmental scan.

There is a need for better coordination around substance abuse so that collaborative efforts can be more easily coordinated. These collaborations can also be beneficial for funding/grant opportunities in Barnstable County. The recent funding of the Massachusetts Opioid Abuse Prevention Collaborative (MOAPC) is an example of state grant monies made available to

Barnstable County as a result of collaborative efforts between municipal and substance abuse organizations.

Another gap identified was the need for a centralized service referral system. Key informants described the process of treatment entry as confusing and difficult to navigate, which may also contribute to a perception of a lack of treatment availability. Assessment of whether or not the current treatment system's capacity meets the demand for services is difficult at this time. This may be related to the current reimbursement structure wherein the consideration of payor mix may, in-part, drive the distribution of available beds or service opportunities. This concern is not specific to Barnstable County--it is recognized across Massachusetts as a barrier to treatment.

In addition to this larger theme, a number of specific gaps were identified. Specialized training in mental health and substance abuse concerns for first responders, including police, fire, and EMS, was identified as a very important and missing part of services in Barnstable County. There is some development in this area, and it was noted as especially important for police officers.

Hepatitis C testing and treatment was recognized as a growing concern in Barnstable County, especially among young injection drug users. Alcohol was also recognized as an important and often under-recognized area of substance abuse treatment. Alcohol and its related concerns were reported as being seen as equally taxing to resources as heroin and opiates by both treatment and law enforcement professionals.

Integration of evidence based practice into prevention services was recognized as a gap in Barnstable County. This includes more information about effective prevention services, better linkages between organizations, and more resources for schools. Formalized recovery services were noted as a gap in services. A lack of youth representation in decision making processes was identified as a gap across sectors, but especially in prevention and recovery. Key informants also reported that the voices of people in recovery were not adequately recognized in conversations about substance abuse.

4. Next Steps and Preliminary Recommendations

This report provides a baseline assessment of the epidemiological and financial cost features of substance abuse on Cape Cod and an inventory of community resources involved in addressing the consequences of these behaviors. As a next step the RSAC will offer recommendations for action, a plan for implementing those recommendations, and a timeline for doing so.

Based upon the integration of the key findings of this report, the following are **preliminary recommendations** for consideration by the Regional Substance Abuse Council to inform their priority setting work.

A. Harm Reduction

i. Increase awareness that addiction is a chronic medical condition.

ii. Educate consumers on the appropriate use of and disposal prescription drugs.

iii. Engage health care professionals, including prescribers and pharmacists, to reduce the negative effects of prescription drug abuse.

iv. Educate the public and policy makers about the importance of harm reduction practices.

v. Institute active systematic surveillance of federal, state and locally generated substance abuse data.

B. Prevention

i. Prevention efforts must address alcohol use, non- medical use of prescription drugs, and illicit drugs.

ii. Identify effective prevention interventions and programs which are evidenced-based for use in Barnstable County.

iii. Evaluate current prevention efforts in Barnstable County.

iv. Establish a unified substance abuse prevention effort.

C. Treatment and Recovery.

i. Centralize substance abuse treatment referrals to help consumers, families, first responders, schools and providers to be matched with appropriate resources and assisted in navigating the treatment system.

ii. Conduct a review of the adequacy of treatment resources available to Cape Cod residents.

iii. Expand recovery support services on Cape Cod, especially for youth and young adults (age 15 to 25). Consideration should be given to developing a recovery high school.

iv. Substance abuse clients exiting the criminal justice system could benefit from evidenced-based case management services as part of re-entry planning/recovery support.

v. Given the impact of addiction on youth and young adults, youth and youth in recovery must be included in the planning process.

D. Criminal Justice/Law Enforcement

i. Support and expand promising community policing programs, substance abuse treatment programs for people in the correction system, re-entry programs and community based supports, and diversion programs such as the drug court and the juvenile and young adult diversion programs.

APPENDIX A. EPIDEMIOLOGY

Indicator = EPI 1: Mortality Rates for Substance Abuse-Attributable Conditions in Barnstable County

Indicator Description: This indicator describes the proportion of mortality that is directly or indirectly attributed to substance use, by broad category (alcohol vs. illicit drugs).

Importance: This data highlights the proportion of deaths that would have been completely or somewhat preventable in the absence of substance use.

Data Source(s): MA Dept. of Public Health, Injury Surveillance Program[40]; Centers for Disease Control and Prevention, National Center for Health Statistics, Compressed Mortality File 1999-2011[35]; Census Bureau, 2010 Census of Population, Public Law 94-171 Redistricting Data file.[36]

Summary: Over the period 2008-2012, a total of 159 Barnstable County deaths occurred from acute poisonings and chronic conditions due to the effects of drugs and 131 deaths due to acute poisonings and chronic conditions due to the effects of alcohol. These values translate into an average annual mortality rate of 14.7 per 100,000 population for drugs and 12.1 per 100,000 for alcohol (Table 10). For Massachusetts overall, the average mortality rate for drug-related conditions was similar to Barnstable County (14.3 per 100,000 population), but the alcohol-related mortality rate (7.1 per 100,000 population) was nearly half that of Barnstable County.

Using a more broad definition of substance-related mortality by including all direct deaths and attributable fractions (AF) of indirect deaths, we estimated 1368 deaths due to alcohol and 539 due to drugs in Barnstable County over the period 2002-2011 (Table 10). This results in an average mortality rate of 63 per 100,000 population for alcohol and 25 per 100,000 per population for drugs. The majority of alcohol-related deaths were due to indirect causes, whereas most drug deaths were direct.

Methodology: Substance use and abuse related mortality was evaluated in two ways. To provide a more conservative estimate, we limited our first analysis to those with mortality codes that are the directly a result of acute or chronic drug poisoning, defined by the Injury Surveillance Working Group [51], presented in Table 11 below. However, because alcohol and drug use is an established risk factor for many other conditions, we calculated mortality rates using a more broad inclusion of mortality codes that have been attributed to alcohol or drug use, and assigned a substance-attributable fraction (AF). The AF is defined as the fraction of disease in the population that would not have occurred if the effect associated with a particular substance (or group of substances) were absent. We reviewed and combined the substance-related AFs from multiple data sources[52,53] before applying these values to the mortality data by cause of death code. Data from multiple years was combined for meaningful reporting of rates because mortality from substance use/abuse-attributable conditions is a rare event.

Furthermore, some data on relevant conditions was not able to be included where the number of events did not exceed the confidentiality restriction threshold. Mortality rates were calculated per 100,000 population using county and state-specific population estimates from the U.S. Census 2010.

Table 10. Drug and Alcohol-Related Deaths and Mortality Rates per 100,000 Population for Barnstable County and Massachusetts, 2008-2010

	Drug-Related Deaths	Avg. Drug-Related Mortality Rate	Alcohol-Related Deaths	Avg. Alcohol-Related Mortality Rate
Barnstable County	159	14.7	131	12.1
Massachusetts	4671	14.3	2335	7.1

Data Source: MA Dept. of Public Health, Injury Surveillance Program; Census Bureau, 2010 Census of Population, Public Law 94-171 Redistricting Data file.

Table 11. Drug and Alcohol-Related Mortality for Barnstable County, by Category, 2002-2011

	Deaths	Avg. Mortality Rate
Alcohol	**1,368**	**63**
Direct Causes	*248*	11
Indirect Causes	*756*	35
Unintentional Injuries	*274*	13
Intentional Injuries	*90*	4
Drug-Related	**539**	**25**
Direct Causes	*367*	17
Indirect Causes	*34*	2
Unintentional Injuries	*20*	1
Intentional Injuries	*118*	5
Total	**1,907**	**88**

Data Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Compressed Mortality File 1999-2011; Census Bureau, 2010 Census of Population, Public Law 94-171 Redistricting Data file.

Note that Table 5 of this report (p. 27) presents recently-released information on opioid poisoning deaths by the MDPH Registry of Vital Records and Statistics (December 2014).[40,41] Based upon these estimates mortality from heroin/prescription opioids may have risen to 15.3 per 100,000 in 2013 and reached 20.8 per 100,000 in 2014.[43]

Indicator = EPI2: Youth Self-Reported Substance Abuse-Related Behaviors

Indicator Description: This indicator describes the proportion of public high school students, grades 9 – 12, reporting use of alcohol and illicit drugs including marijuana, cocaine, ecstasy, methamphetamines, heroin, steroids, misuse of prescription drugs, misuse of over the counter (OTC) medication, and inhalants in their lifetime (current use) or currently (within the past month).

Importance: These data shows the relative use of several illicit and highly addictive substances among youth in Massachusetts overall, and within two Barnstable County communities on Cape Cod.

Data Source(s): MA Youth Risk Behavior Surveillance System (YRBSS, 2013)[8], and locally-conducted Sandwich (2012) and Falmouth (2012-2013) YRBSS surveys[25]. Note that the communities of Sandwich and Falmouth are in no way being singled out. These communities' survey information is the most recent available. Their results are not taken to represent youth Cape-wide; similar surveys in other Cape Cod communities would offer a clearer picture of the region.

Summary: State-wide, 63% of high school students reported lifetime alcohol use and 36% reported current alcohol use which was similar to the proportions reported by Sandwich students (65% and 39%, respectively; Table 12). Compared to the state, the proportion of high school students who reported current binge drinking was 6 percentage points higher in Sandwich (24% vs. 19%).

About forty percent of high school students across the state and in Sandwich reported lifetime marijuana use (41% and 40%), while 25% and 28%, respectively, reported current marijuana use. Current marijuana use was 25% state-wide, compared to 28% in both Sandwich and Falmouth.

Lifetime inappropriate use of prescription drugs was reported by 13% of students state-wide compared to 9% of Sandwich students; however, current inappropriate use of prescription drugs was reported by 5% of Sandwich students compared to 3% both state-wide and in Falmouth. Lifetime use of over-the-counter (OTC) drugs to get high was reported by 11% of Sandwich students versus 5% state-wide.

Approximately five percent of students reported having ever used cocaine (4% and 5% for MA and Sandwich, respectively), ecstasy (5%) and inhalants (5%, Sandwich only).

Methodology: Data on youth substance-related behaviors was captured for Massachusetts high school students overall through the state-level youth risk behavior surveillance (YRBS) program. In addition to this state-representative data, two Barnstable County communities conducted recent local high school YRBS surveys. These three data sources are provided below (Table 12). These data are limited by self-report and concerns around under-reporting of sensitive topics;

however, one prior study validating self-report of drug use among youth and young adults suggests that most self-report recent use accurately.[54] Comparisons between proportions are described, but differences have not been tested for statistical significance.

Table 12. Proportion of High School Students Reporting Substance-Related Behaviors, Massachusetts, Sandwich and Falmouth, 2012-2013

	Massachusetts 2013 %	Sandwich 2012 %	Falmouth 2012-13 %
Alcohol			
Lifetime alcohol use	63	65	N/A
Current alcohol use	36	39	35
Current binge drinking	19	24	N/A
First drink before age 13	11	9	N/A
Marijuana			
Lifetime marijuana use	41	40	N/A
Current marijuana use	25	28	28
First marijuana use before age 13	7	5	N/A
Cocaine			
Lifetime cocaine use	4	5	N/A
Ecstasy			
Lifetime ecstasy use	5	5	N/A
Methamphetamines			
Lifetime methamphetamine use	2	1	N/A
Heroin			
Lifetime heroin use	1	1	N/A
Steroids			
Lifetime steroid use	2	1	N/A
Inappropriate Prescription Drugs			
Lifetime inapp pres. drug use	13	9	N/A
Current inapp pres drug use	3	5	3
OTC Medication			
Lifetime OTC use to get high	5	11	N/A
Inhalants			
Lifetime inhalant use	N/A	5	N/A
General			
Needle for injecting drugs	N/A	1.5	N/A

Data Source: MA Youth Risk Behavior Surveillance System (YRBSS), and local Sandwich and Falmouth YRBS.
Notes: N/A data not available.

Indicator = EPI3: Adult Self-Reported Substance Abuse-Related Behaviors

Indicator Description: This indicator describes the proportion of adults aged 18 and above in Barnstable County and Massachusetts who report substance-related risk behaviors including consumption of alcohol, all illicit drugs, marijuana, cocaine, and non-medical use of pain relievers in addition to unmet need for treatment.

Importance: This data shows the relative use of several illicit and highly addictive substances among adults (age 18+) in Barnstable County and Massachusetts overall.

Data Source(s): MA Behavioral Risk Factor Surveillance System, 2011-2012[44]; SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2011 and 2012.[10]

Summary: Over two-thirds of Barnstable County (69.4%) and Massachusetts (68.2%) adults (age 18+) reported current alcohol consumption (Table 13 and Table 14, respectively). Past-month binge drinking among Barnstable County residents was 16.4% compared to 28.4% state-wide. Within the state-wide data, binge drinking was most prevalent among individuals aged 18 – 25 (47.2%).

Alcohol dependence or abuse was reported by 8.3% of all Massachusetts adults (age 18+), and 16.3% of adults aged 18-25. Unmet need for treatment followed a similar pattern, at 7.6% of adults (age 18+) state-wide and 15.8% of adults aged 18 – 25.

Overall, one-tenth of Massachusetts adults aged 18 and above reported any illicit drug use within the past month (10.8%). Adults aged 18 – 25 reported the highest usage of illicit drugs. Within the past month, 25.8% reported marijuana use and 7.2% reported other illicit drug (non-marijuana) use. Over the past year, 5.5% of adults aged 18-25 used cocaine, and 9.0% used pain relievers for non-medical uses. Unmet need for illicit drug treatment was at 2.0% of adults (age 18+) state-wide and 6.3% of adults aged 18 – 25.

Methodology: Data on adult alcohol behaviors was captured for Barnstable County through the state-level behavioral risk factor surveillance system (BRFSS). Representative data at the state level were collected as part of the National Survey on Drug Use and Health (NSDUH). The data are limited by self-report. Comparisons between proportions are described, but differences have not been tested for statistical significance.

Table 13 presents data on alcohol-related behaviors only. Over the past decade, drug-related behavior questions were included within the 2011 BRFSS questionnaire only, and administered to only one subset of survey respondents. Due to the combination of a reduced sample size and high non-response for these items, these data are not available.

In Table 14, below, illicit drugs include marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or prescription-type psychotherapeutics used non-medically. 'Other

illicit drugs' includes all listed drugs but excludes marijuana. Binge alcohol use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days. Dependence or abuse is based on definitions found in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Unmet need for treatment refers to respondents classified as needing treatment for illicit drugs (or alcohol) based on self-reported symptoms using criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)[55], but who did not report having received treatment for an illicit drug (or alcohol) problem at a specialty facility (i.e., drug and alcohol rehabilitation facilities (inpatient or outpatient), hospitals (inpatient only), and mental health centers).

Table 13. Alcohol Behaviors among Barnstable County Residents Age 18 and above, 2011-2012

	%	95% CI
Current alcohol consumption	69.4	65.5 - 73.3
Past month binge drinking	16.4	13.2 - 19.6

Data Source: MA Behavioral Risk Factor Surveillance System (BRFSS) 2011-2012

Table 14. Self-reported Substance Behaviors, Massachusetts, 2011-2012

	Age 18+ %	**Age 18 - 25** %	**Age 26+** %
Alcohol			
Past Month Alcohol Use	68.2	69.3	68.0
Past Month Binge Alcohol Use	28.4	47.2	25.1
Alcohol Dependence or Abuse, Past Yr	8.3	16.3	6.9
Unmet Need for Alcohol Treatment	7.6	15.8	6.2
Illicit Drugs			
Past Month Illicit Drug Use	10.8	27.2	7.1
Past Year Marijuana Use	15.2	40.5	10.7
Past Month Marijuana Use	9.3	25.8	6.3
Past Month Use of Other* Illicit Drugs	3.2	7.2	2.5
Past Year Cocaine Use	1.9	5.5	1.3
Past Year Nonmedical Pain Reliever Use	3.9	9.0	2.9
Illicit Drug Dependence or Abuse, Past Yr	2.3	7.3	1.4
Unmet Need for Illicit Drug Treatment	2.0	6.3	1.3

Data Source: SAMHSA, Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2011 and 2012.
*Note: *Excludes marijuana*

APPENDIX B: COST ANALYSIS INDICATORS BY DOMAIN

Appendix B: Harm Reduction

Indicators = HR1 to HR6

Indicator Description: Activities undertaken to reduce harm to the substance abusing persons and/or reduce harm to the community from substance abuse by people unwilling and/or unable to stop.

Importance: Identifies and calculates estimated costs of community-based activities focused on limiting the negative impact on the community of substance abusers by seeking to limit and control availability of illegally marketed prescription drugs and to the limit the potential for exposure to infectious diseases from improperly disposed syringes and needles resulting from intravenous drug use.

Data Source(s): Key informant interviews; peer-reviewed literature; news reports; (citations pending).

Summary:

In Table 15 are summarized the results of our work to estimate the cost of harm reduction activities in Barnstable County. We estimate that the cost of these activities total approximately $700,000, with over 85% of that cost attributable to reducing the harm associated with heroin/prescription opioid use.

Table 15. Estimated Costs of Harm Reduction Domain

HARMS REDUCTION			Estimated Cost	Alcohol	Heroin/Opiates	Marijuana	Other Drug
HR1	Cost of programming that manages community-based collection and disposal of excess prescription drugs.	Barn. Cooperative Extension	**$8,386**	$0	$8,386	$0	Pending
HR2	Cost of programming to manage community-based syringe and needle exchange.	AIDS Support Group	**$120,000**	$0	$120,000	$0	Pending
HR3	Cost of programming to manage appropriate community-based syringe and needle disposal.	Barn. Cooperative Extension, Police Depts.	**$4,483**	$0	$4,483	$0	Pending
HR4	Cost of proactive law enforcement engagement with community, particularly with high risk groups, for prevention.	Local Police Departments	**$263,954**	$79,186	$171,570	$13,198	Pending
HR5	Cost of programming to conduct: 1) beach scanning for blood-borne pathogens, and 2) training for these workers.	Barn. Health Dept; Town of Barn. DPW	**$190,835**	$0	$190,835	$0	Pending
HR6	Cost of programming providing education and naloxone to prevent death from opioid overdose.	MA DPH; AIDS Support Group	**$119,552**	$0	$119,552	$0	$0
			$707,209	**$79,186**	**$614,826**	**$13,198**	**$0**

Our analysis of harm reduction activities in Barnstable County includes the following indicators:

HR1. Collection and disposal of excess prescription drugs

HR2. Community-based syringe and needle exchange programs

HR3. Community-based syringe and needle disposal programs

HR4. Proactive law enforcement/community policing.

HR5. Blood borne pathogen training of public workers, and monitoring of public places for substance abuse-related waste

HR6. Programming to provide education to first responders and community and to provide naloxone (Narcan) to prevent opioid overdose.

HR1 takes place county-wide and largely consists of the estimated cost of servicing drug drop boxes and kiosks located across the Cape, and of organizing 2 "Drug Take Back Days" per year. Note that the estimated percentage of drugs taken back that are abused by addicted persons is 10%. Thus that percentage is applied to the estimated total costs of the drop boxes and Take Back Days to derived the costs attributable to drugs being abused.

HR2. Needle exchange programming on the Cape is largely confined to the outer Cape and is overseen by the Cape Cod AIDS Support Group.

HR3, HR5, and HR6 take place county-wide:

HR3 is overseen by the Barnstable County Cooperative Extension.

HR5. The Barnstable County Health Department offers blood borne pathogen training county-wide to first responders and workers at risk for exposure; towns' public works staff are those individuals who are most likely to encounter medical waste.

HR6. Training of police in the use of Narcan is conducted by staff of the House of Correction's Health Services section. Training of community members is conducted by AIDS Support Group and Learn to Cope[ix].

HR4. The Town of Barnstable is only police department on Cape Cod that is known to have a distinct community policing unit. 90% of the units total cost is attributed to substance abuse-related work. Thus Barnstable County's estimated expenditure for community policing only reflects the Town of Barnstable's work. The cost per capita to provide this service in Barnstable = $5.84; this figure could provide a starting point for estimating the cost of establishing such a service in other jurisdictions.

Methodology:

For calculation of HR indicators 1, 3, 4, and 5 staff level salary and fringe costs were added to program costs in order to build up the total cost of providing these services. The program cost information for indicators HR 2 and 6 came from the AIDS Support Group via key informant interview, and to HR6 was added the cost of the Narcan doses from the MADPH.

[ix] Learn to Cope is a support organization that offers education, resources, peer support and hope for parents and family members coping with a loved one addicted to opioids or other drugs.

Appendix B: Prevention

Indicator = P1: Cost of Prevention Activities, Youth and Adult Focused

Indicator Description:

This indicator encompasses the substance abuse prevention activities which take place in Barnstable County. It includes the Sheriff's youth programs, the District Attorney's Juvenile and Youth Diversion programs, a number of community coalitions, town-affiliated committees in Falmouth and Sandwich, and the activities of Gosnold's Prevention Division.

Importance: Documents the participants and costs of substance abuse prevention activities in Barnstable County.

Data Source(s): Key informant interviews; publically-available agency budgets and documentation; IRS Form 990's; print media; agency websites; local population statistics.

Summary:

In Barnstable County, citizen-led coalitions, municipalities, and non-profit agencies coalitions undertake substance abuse prevention activities. Their costs of doing so are approximately $1 million per year. The majority of these activities (85%, as measured by cost) are directed at youth.

Coalitions and Non-Profits:

1. Gosnold on Cape Cod
2. Freedom from Addiction Network (FAN)
3. Cape Cod Justice for Youth Collaborative
4. Lower Cape Community Anti-Drug Network
5. Mashpee Cares (a community coalition)
6. Falmouth Together We Can
7. Plain Talk

Agencies and Government:

8. District Attorney's Juvenile and Youthful Diversion Program (for non-violent offenders)
9. Barnstable County Sheriff's Youth Programs (GREAT, Youth Academy, B.A.R.S., Drug Education presentations in schools)
10. Sandwich Substance Abuse Prevention Task Force
11. Falmouth Substance Abuse Commission
12. Falmouth Prevention Partnership (overseen by Gosnold Prevention Division)
13. Town of Harwich Youth Counselor

Methodology:

Information on these entities was gathered via key informant interview of agency and/or program lead, when possible, to determine funds allocated to prevention work.

Coalitions for which budgets do not exist were assigned a placeholder cost estimate of $10,000 per coalition to represent the total annual allocated cost of members' time and transportation costs of participating.

Review of publically-available IRS Form 990's of registered non-profit organizations allowed estimation of their budgets and therefore their funding dedicated to prevention work.

Appendix B: Law Enforcement

Indicator = LE0: Criminal Justice System Costs Attributable to Substance Abuse in Barnstable County

Indicator Description: LE0 is the indicator used to describe the costs to the criminal justice system arising from substance abuse. The analysis includes the 15 police departments in Barnstable County, the Sheriff's Office (includes Barnstable County House of Corrections), and the Courts and Probation

Importance: Understanding the activities and costs within the criminal justice system devoted to addressing crimes associated with substance abuse is critical to a full understanding of the substance abuse problem in a community.

Data Source(s): Key informant interviews; publically-available agency budgets; print media and reports; state and local population statistics.

Summary: Table 16 presents the findings of our Direct Cost analysis.

Table 16. Summary of Substance Abuse-Related Criminal Justice System Costs

Indicator LE0: Summary of Substance Abuse Related Criminal Justice System Costs					
SUMMARY	As of 1/1/2015				
Sector	Total Cost	Alcohol Attributed	Heroin/Opioid Attributed	Marijuana Attributed	Other Drug Attributed
Police	$26,939,111	$9,428,689	$17,510,422	Pending	Pending
Courts	$11,211,963	$5,253,606	$5,958,358	Pending	Pending
Sheriff--Jail	$15,052,063	$7,052,967	$7,999,096	Pending	Pending
Sheriff--Other	~~$1,529,681~~	$716,765	$812,916	Pending	Pending
Total	**$54,732,818**	**$22,452,026**	**$32,280,792**		

Police department budgets on Cape Cod total approximately $54 million annually. Based upon several interviews and reviews of local media stories (dating from the past two years) we conservatively estimated that one-half of police department budgets can be allocated to substance abuse-related activities from the point of view of time spent by officers and staff in dealing with these activities.[56] Further inquiry resulted in our ability to allocate that budgetary amount to the substances which prompt the majority of their calls (35% attributable to alcohol, 65% attributable to heroin/prescription opioid use per Falmouth PD).

A similar approach was taken to estimating the attributable costs within Barnstable's share of the state Judiciary Budget (which includes Public Council, Trial Court, Superior Court, District

Court, Juvenile Court, Probation, Community Corrections, and District Attorney). On a per capita basis, Barnstable County's share of the state judiciary budget is 3.2%, or approximately $22.5 million. Of that amount 50% was allocated to substance abuse-related crimes. Further allocation of that amount was done on the basis of data received on the numbers of alcohol dependent vs. opioid dependent inmates within the county Jail population.

The Barnstable County House of Corrections is operated by the Sheriff's Office. Via interview we learned that approximately 75% of the Jail's total annual budget (approximately $25 million per year) can be attributed to persons adjudicated for substance abuse-related crimes. Further allocation of that amount was done on the basis of data received on the numbers of alcohol dependent vs. opioid dependent inmates within the county Jail population.

Methodology: By means of key informant interviews and review of publically-available agency budgets (deriving Barnstable County's share of state budgets by applying relevant population percentages) we were able to estimate the percentage of budget expenditures attributable to substance abuse-related crimes. Importantly, information from the Jail's booking processes and substance abuse treatment activities allowed us to estimate costs attributable to alcohol vs. heroin/prescription opioid offenses within the system.

Further work in this area will allow more refined allocations of cost to marijuana and other drug offenses. However, information received from key informant interviews suggests that the major substance-related categories of concern within the sector are alcohol and heroin/prescription opioid. Additionally, future refinements of this analysis will include information and costs associated with State Police activity in Barnstable County related to substance abuse.

Appendix B: Law Enforcement

Indicator = LE2: Substance Abuse-Related Motor Vehicle Accidents and Costs in Barnstable County, 2012

Indicator Description: This indicator provides an estimate of the number of motor vehicle crash fatalities with any substance involvement.

Importance: These data indicate the importance of substance use as a risk factor for preventable motor vehicle crash fatalities.

Data Source(s): Fatality Analysis Reporting System (FARS): National Highway Traffic Safety Administration, 2012[57]; Centers for Disease Control and Prevention (CDC), Cost of deaths from motor vehicle crashes, Massachusetts, 2005.[58]

Summary: During 2012, 25 traffic fatalities occurred in Barnstable County, and 349 total state-wide. By blood alcohol content (BAC), 16 Barnstable County fatalities involved no alcohol, while 9 involved some alcohol. There was 1 fatality with "highest driver BAC" (i.e. the highest measured BAC level of all persons involved in the accident) between 0.01-0.07, and 8 where highest driver BAC was 0.08 or above (Table 17).

Fatal alcohol and drug attributions based on previous literature would suggest that that 12.9 of the motor vehicle crash fatalities involved alcohol, and 4.5 involved drugs. Data from Massachusetts suggests that by age group, young adults (aged 20-34) and teens (aged 15-19) accounted for a large proportion of the total costs, at 48% and 17%, respectively [59].

Applying average state-level medical and work loss costs per fatality, in 2012, motor vehicle fatality costs due to alcohol were $8.2 million using the legal definition of alcohol-impaired driving, BAC≥0.08, while costs due to drugs were approximately $4.6 million. However, for the Direct Cost analysis only the medical portion of MV fatalities is considered at this time, and is estimated to be only a small fraction of the total fatality cost (Table 18). Future iterations of the analysis will include the remaining attributable economic and external costs.

Methodology: We obtained fatalities by highest driver blood alcohol content from the FARS, and attributable fractions for alcohol and drug involvement from available NHTSA reports of 2009 (drug) 2012 (alcohol) motor vehicle crashes[57,60]. These data indicate that 31% of fatal motor vehicle accidents nationally are alcohol-related, which is consistent with the Barnstable County data (32%). Drug test results were affected by high rates of unknown results; the proportion of drug-involved crashes is conservatively estimated at 18%, representing the proportion that tested positive for drugs among all of those that were tested, but may be as high as 33%, which represents the proportion that tested positive for drugs among all of those that were tested and results were not indicated as unknown[60].

We estimated total costs per substance-related fatality using data from the Centers for Disease Control and Prevention (CDC) from 2005, and applied the US Dollar Implicit Price Deflator to adjust to 2012 dollars for consistency with data year. CDC estimated costs included both medical and work loss costs. Work lost costs included total estimated salary, fringe benefits, and value of household work that an average person of the same age and sex as the person who died would be expected to earn over the remainder of his or her lifetime. We present data on alcohol-related costs for three different categories: 1) in the presence of any BAC from the FARS data, 2) presence of BAC that meets the legal definition of driving under the influence of alcohol of ≥0.08, and 3) estimating the attributable proportion using the literature. Each of these methods has its limitations.

Table 17. Number of Traffic Fatalities by Highest Driver Blood Alcohol Content, Barnstable County and Massachusetts, 2012

	Barnstable County		MA	
	n	%	n	%
Traffic Fatalities	25	100	349	100
BAC = 0.0**	16	64.0	202	57.9
BAC 0.01-0.07	1	4.0	79	22.6
BAC ≥ 0.08	8	32.0	123	35.2

Data Source: Fatality Analysis Reporting System (FARS): National Highway Traffic Safety Administration, 2012.
***No or unknown alcohol involvement.*

For the Direct Cost analysis only the medical portion of MV fatalities is considered, and is estimated to be only a small fraction of the total fatality cost. Future iterations of the analysis will include the remaining attributable economic and external costs.

Table 18. Estimated Costs from Motor Vehicle Crash Fatalities, Barnstable County and Massachusetts, 2012

Estimated Costs from Motor Vehicle Crash Fatalities, Barnstable County and Massachusetts, 2012			
	Barnstable	MA	
Total Costs per Fatality	$1,021,381		% of Fatality Cost
Medical Costs	$15,554		**1.5%**
Work Loss Costs	$1,005,827		98.5%
Barnstable-Related Fatality Costs, Medical			Direct Medical Costs
Barnstable **Alcohol-Impaired Fatality Costs**, BAC>0.08	**$8,171,046**	x 1.5% =	$124,432
Barnstable **Drug-Impaired Fatality Costs** (AF 0.18)	**$4,596,213**	x 1.5% =	$69,993
Fatality-Related Medical Costs (Direct Cost Analysis)			**$194,425**

Data Sources: Fatality Analysis Reporting System (FARS): National Highway Traffic Safety Administration, 2012; Centers for Disease Control and Prevention, 2005; 18% drug-related AF from Jones RK, Shinar D, Walsh JM. State of knowledge of drug-impaired driving. Dept of Transportation (US), National Highway Traffic Safety Administration (NHTSA); 2003. Report DOT HS 809 642.

Appendix B: Law Enforcement

Sub-Analysis: Substance Abuse-Related Crimes and Arrests

Indicator Description:
This indicator describes the number and rate of crimes and arrests with substance involvement in Barnstable County.

Importance:
This data shows the magnitude of criminal activity that has some substance involvement.

Data Source(s):
Crime and arrest data from Uniform Crime Reporting System, Federal Bureau of Investigation[61]; Attributable Fraction (AF) estimates from Office of National Drug Control Policy (2004).

Summary: During 2012, a total of 7,156 Violent or Property Crimes were reported in Barnstable County[61]; 901 of these were violent crimes (i.e., murder and non-negligent manslaughter, forcible rape, robbery and aggravated assault) and 6,255 were property crimes (i.e., burglary, larceny-theft and motor vehicle theft). In Table 19 we make use of research-based attributable fractions[62] to estimate the proportion of reported crimes can be attributed to alcohol or drug-related reasons.

Table 19. Violent and Property CRIME EVENTS, Barnstable County, 2012

	Violent Crime	Property Crime	Total Crimes
Total Number of Events	901	6,255	7,156
Number of **Alcohol**-Attributable Events	243.77	193.33	437
Number of **Drug**-Attributable Events	43.36	1,809.50	1,853

Data Sources: *Crime data from Uniform Crime Reporting System, Federal Bureau of Investigation; Attributable Fraction (AF) estimates from Office of National Drug Control Policy (2004).*

An associated analysis is presented in Table 19, which shows arrests for Barnstable directly related to substance use including drug abuse violations, driving under the influence, liquor laws, and drunkenness. Note that not all reported crimes (7,156; Table 17) result in arrests (6,867; Table 18). Thus, we present both crimes and arrests information in order to better understand the burden of these crimes on Barnstable County.

With reference to Table 20, of the 6,867 arrests that were reported by Barnstable County in 2012, 2,049 (29.8%) were directly related to substance use. Of these, 21.5% were for drug-

abuse violations, 36.7% for driving under the influence, 5.5% for liquor laws and 38.4% for drunkenness. The rate of substance-related arrest was 951.2 per 100,000 population.

Table 20. Substance-related ARRESTS by Offense Category, Barnstable County, 2012

Offense	Total	Age <18	Ages 18+	Rate Age <18	Rate 18+	Total Rate per 100,000
All Offenses	6,867	529	6,338	245.6	2942.1	3187.7
Substance-Related	**2,049**	**81**	**1,968**	**37.6**	**913.6**	**951.2**
Drug Abuse Violations	*440*	*24*	*416*	*11.1*	*193.1*	*204.2*
Driving Under the Influence	*710*	*2*	*708*	*0.9*	*328.7*	*329.6*
Liquor Laws	*113*	*41*	*72*	*19.0*	*33.4*	*52.5*
Drunkenness	*786*	*14*	*772*	*6.5*	*358.4*	*364.9*

Data Sources: Arrest data from Uniform Crime Reporting System, Federal Bureau of Investigation, 2012; Attributable Fraction (AF) estimates from Office of National Drug Control Policy (2004).

Methodology: For Table 19 we applied attributable fractions from the literature by crime type to estimate the number of Barnstable County crime events that were alcohol or drug-related.[52,63] Violent crimes include: aggravated assault, homicide, murder and non-negligent manslaughter, rape and robbery. Property crimes include: arson, burglary/breaking & entering, larceny, and motor vehicle theft.

Crime data presents the number of crime events, whereas arrest data presents only those crimes for which a perpetrator has been identified and an arrest has been made.

Arrest data are presented only for those categories that directly involved alcohol or illicit drugs and these data are those that were reported by Barnstable County law enforcement via the FBI Uniform Crime Reporting System in 2012.

Appendix B: Treatment and Recovery

Indicator = TR0: Summary Analysis of Substance Abuse-Related Treatment and Recovery Costs

Indicator Description:

TR0 is the indicator used to estimate the costs associated with medical treatment of substance dependent persons at multiple points in the healthcare system: emergency room, inpatient hospital (detox and other substance use-related), rehabilitation (residential or community-based). Costs of private-pay or private insurance paid counseling sourced from individual counselors is not included at this time.

Importance:

Offers an understanding of the main providers in Cape Cod's treatment and recovery system and of the costs associated with use of these services by substance dependent persons.

Data Sources:

Key informant interviews; peer-reviewed literature; reports; gray literature, internet search.

Summary:

Sector participants (inpatient and outpatient treatment and recovery, and emergency care) for which we have estimated costs are listed in Table 21. For proprietary reasons, we provide only total estimated cost, and that figure is further broken down by the percentages of cost attributed to addressing each substance, as reported by the provider or estimated by BCDHS staff.

Methodology:

Interview of key staff at Gosnold, Cape Cod Healthcare, South Bay, Outer Cape Health Services, and Duffy Health Center allowed cost estimation and categorization of their substance abuse-related services to take place.

Primary data on hospital encounters at Cape Cod Healthcare (CCHC) during 2013 were received directly from the agency and include a hospitalization or emergency department visit for a substance abuse-related diagnosis in one or more of the first four DRG diagnostic positions. Categorizations of diagnoses into Alcohol, Heroin/Opioids, Marijuana, or Other are determined by first occurring substance abuse-related diagnosis in the patient record.

Costs associated with EMS transport of substance abusing patients, methadone treatment by Habit OPCO, and OBOT treatment in physicians' offices are estimates based upon system capacity and associated costs.

Table 21. Estimate of Substance Abuse Treatment and Recovery Costs, Inpatient and Outpatient, 2013

Estimate of Substance Abuse Treatment and Recovery Costs, Inpatient and Outpatient, 2013						
(From Locally Sourced Data)						
			Attribution to Substance: Percentages & Costs			
Provider		**Estimated Cost**	Alcohol	Heroin/ Opioids	Marijuana	Other Drug
Gosnold--Inpatient	Detox + Residential Tx		**50%**	**50%**	**0%**	**0%**
Gosnold--Outpatient	OBOT + Vivitrol + Counseling		**50%**	**50%**	**0%**	**0%**
CCHC--Inpatient	Admissions, Dx 1..Dx 4 Substance Abuse-Related		**57%**	**16%**	**4%**	**22%**
CCHC--Emergency Dept	ER Visits, Dx 1..Dx 4 Substance Abuse-Related		**58%**	**14%**	**3%**	**24%**
EMS	Emergency Transport		**57%**	**19%**	**4%**	**20%**
South Bay	Mental Health + Day Programs		**40%**	**60%**	**0%**	**0%**
Habit OPCO*	Methadone		**0%**	**100%**	**0%**	**0%**
Community Health Cent	OBOT Programs		**0%**	**100%**	**0%**	**0%**
Private Physicians (n = 1	OBOT Programs		**0%**	**100%**	**0%**	**0%**
B. Total Estimated Expediture in Barn. County for Subst Abuse Tx and Recovery		**$49,665,073**	**$22,135,472**	**$22,603,501**	**$764,095**	**$4,162,005**
			Alcohol	Heroin/ Opioids	Marijuana	Other Drug
Sources and Linked Sheets:						
South Bay: Interview with Kim Arouca et al., 10/7/14						
Gosnold: Sub-sheet in P1, Prevention--Youth-Focused and Adult Focused Costs.xlsx						
Cape Cod HealthCare: Revised Direct by Substance Consumed_Rev6, VH Analysis 12-18-14.xlsx						
* Methadone and OBOT/MAT Treatment: Sub-sheet in this workbook = TR4_Tx_MAT_Cost						

Appendix B: Treatment and Recovery

Indicator = TR7: Recovery Community Costs (Mutual-support Meetings and Sober Homes)

Indicator Description:

Estimated costs associated with substance abuse mutual-support groups including AA, NARC Anonymous, AlaTeen, and estimated costs associated with Sober Homes.

Importance: Community-based components of the recovery process wherein the client is re-integrating into society.

Data Source(s): Key informant interviews; reports; gray literature; internet research, newspaper articles.[64]

Summary:
Total costs of this indicator are estimated to be $2.1 million. We estimate that over 350 mutual-support meetings are held on Cape Cod per year, the majority of which are AA meetings (see Table 22). Associated costs per meeting are estimated at $139, for a total estimated cost of $50,000 per year in outlay to hold these meetings. Not enumerated is the estimated cost of attendees' time.

Table 22. Estimated Mutual-support Group Meetings per Year, and Mutual-support Costs.

Group	# of Meetings/ Year	Annual Cost
AA	272	$ 37,808
NA	38	$ 5,282
Al Anon/Alateen/Narc-Anon	48	$ 6,672
Other (x Helping x, Learn to Cope)	4	$ 556
Total	**362**	**$50,318**

At least 27 Sober Homes on and off-Cape serve Barnstable residents-- 14 cater to men, 11 cater to women, and 2 cater to both. All but two (in Orleans and Hyannis) are located the Upper Cape (Mashpee, Falmouth, Bourne) or off-Cape (Buzzards Bay, Wareham, Plymouth). We understand that this sector is lightly regulated and therefore it is difficult to enumerate total number of facilities and beds on Cape Cod. Our work uses estimates of 10 beds per facility at a cost of $150 per week. It is likely that both the total number of sober home beds and the revenue of $150/week/bed are significant underestimates.

Methodology:

Key informant interviews with members of the treatment community who refer to mutual-support groups and Sober Homes were an important source of information, as we publically-available information via internet search. Cost estimates for meetings were derived via a unit cost per meeting, found in the literature. Sober Homes costs are estimated on a revenue per-bed per week basis.

Appendix B: Treatment and Recovery

Sub-Analysis: Treatment Admissions to DPH-licensed Substance Abuse Treatment Programs

Indicator Description: This is the overall number of substance abuse treatment admissions to DPH-funded treatment programs of Barnstable County Residents for 2013.

Importance: This provides a snapshot of the number of people in Barnstable County who are treated for substance abuse each year.

Data Source(s): MA Department of Public Health, Bureau of Substance Abuse Services, TEDS 2009-2013.[38]

Summary: In FY 2013, there were 5,133 enrollments for publicly-funded substance abuse treatment by Barnstable County residents.

Table 23 indicates the number of enrollments and proportion of enrollments by service category and type. Most individuals were admitted to acute treatment services (34.4%), outpatient counseling (19.0%) or outpatient day treatment (11.9). By primary drug mentioned, the majority of admissions were for alcohol (45.9%) or heroin (34.4%). Fewer admissions were for primary drug category 'all other opiates' (12.4%), marijuana (3.6%), crack/cocaine (1.9%) or other (1.7%) (Table 24, Publicly-funded Substance Abuse Treatment Admissions by Primary Substance, Barnstable County Residents, FY 2013).

Figure 4 presents the proportion of treatment admissions by substance over the period 2009-2013. Over this period, the total number of treatment admissions for most substances declined while admissions for heroin increased slightly. In 2013, the majority of treatment admissions involved alcohol (69.8%), followed by heroin (41.3%), other opiates (28.3%) and marijuana (27.9%).

Treatment admissions were more prevalent for males (62.2%) than females (37.8%), particularly for youth (72.8% vs. 27.2%, respectively; not shown). Nearly one-quarter of treatment admissions were young adults (age 18-24; 24.0%), followed by individuals aged 25-29 (18.8%) and 30-34 (12.0%).

Methodology:
This data includes information on publicly-funded treatment admissions only. It is important to note that while substance abuse treatment admissions are an indicator of the number of people who receive treatment for substance abuse problems, it may not be indicative of the magnitude of the problem. If treatment admissions are rising, it is not clear whether this trend is due to increased capacity and awareness of treatment services or changes in consumption, or both. Treatment admissions per year by substance may not sum to 100% due to concurrent substance use. Furthermore the same individual may be counted twice if admitted twice within the same year.

Table 23. Publicly-funded Substance Abuse Treatment Enrollments by Service Type, Barnstable County Residents, FY2013

Service Category	Service Type	# Enrollments	% Enrollments
Acute Treatment	Acute Treatment Services	1,765	34.4%
Criminal Justice	County Corrections	72	1.4%
	Earmark Case Management/Jail Diversion	8	0.2%
	Jail Diversion	28	0.5%
	Section 35	80	1.6%
	State Parole Board	45	0.9%
Drunk Driver	1st Offender Drunk Driver	435	8.5%
	2nd Offender Aftercare	69	1.3%
Medicated Assisted Treatment	Methadone Treatment	55	1.1%
	OBOT	95	1.9%
Outpatient	Outpatient Counseling	976	19.0%
	Day Treatment	609	11.9%
Post-Detox	Clinical Stabilization Services	264	5.1%
	Tewksbury Stabilization	11	0.2%
	Transitional Support Services	109	2.1%
Residential	Therapeutic Community	32	0.6%
	Recovery Home	274	5.3%
	Social Model House	19	0.4%
	Family Residential	9	0.2%
	2nd Offender Residential	87	1.7%
Youth	Adolescent Recovery Home	0	0.0%
	Recovery High School	0	0.0%
	Youth Residential	19	0.4%
	Youth Stabilization Services	62	1.2%

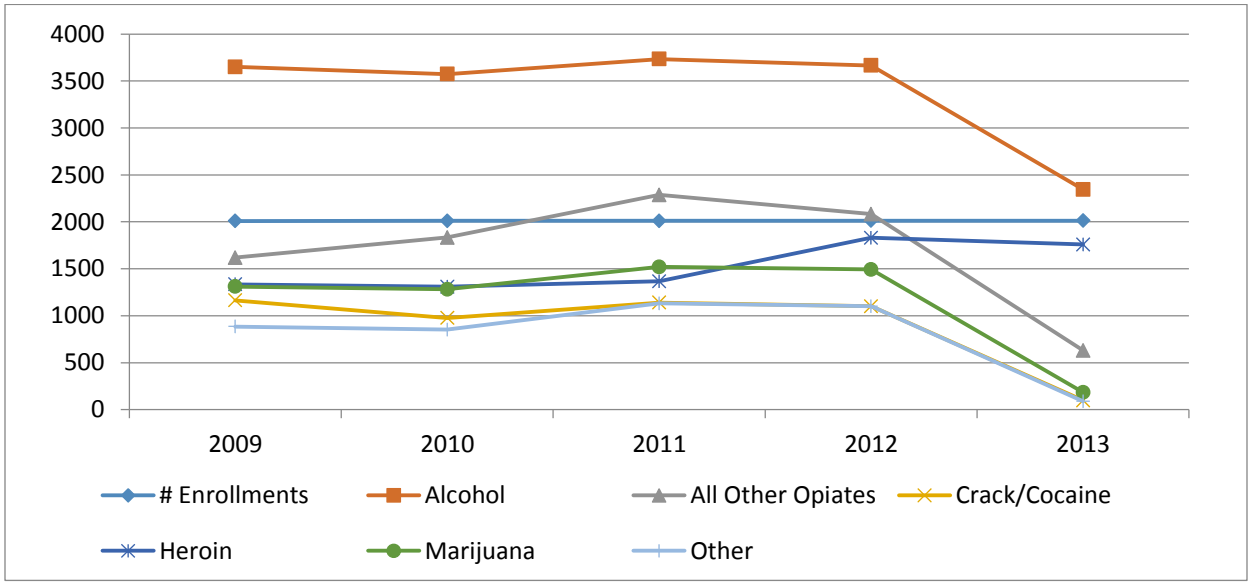
Data Source: Massachusetts Department of Public Health, Bureau of Substance Abuse Services, 2013

Table 24. Publicly-funded Substance Abuse Treatment Admissions by Primary Substance, Barnstable County Residents, FY2013

Primary Drug	Admissions	
	n	%
Alcohol	2,345	45.9
All Other Opiates	631	12.4
Crack/Cocaine	98	1.9
Heroin	1,758	34.4
Marijuana	184	3.6
Other	88	1.7

Data Source: Massachusetts Department of Public Health, Bureau of Substance Abuse Services, 2013

Figure 4. Publicly-funded Substance Abuse Treatment Admissions by Substance, Barnstable County Residents, FY2009-FY2013



Data Source: Massachusetts Department of Public Health, Bureau of Substance Abuse Services, 2013

Appendix B: Treatment and Recovery

Sub-Analysis: Cancer Incidence for Alcohol Abuse-Related Conditions in Barnstable County

Indicator Description: This indicator defines the alcohol-attributable average incidence rate of 6 cancers with alcohol etiologies.

Importance: These data provides important information on preventable chronic alcohol-related morbidities.

Data Source(s): Massachusetts Cancer Registry[65]; Centers for Disease Control and Prevention National Program of Cancer Registries (NPCR) Cancer Surveillance System, January 2014 data submission[66]; National Cancer Institute, Population data from the 1969-2012 US Population Data File.[67]

Summary: Over the period 2005-2009 there were a total of 2,813 cancers diagnosed for which alcohol consumption has been identified as a risk factor (Table 25), including cancer of the breast, colon/rectum, esophagus, larynx, liver and intrahepatic bile ducts, and oral cavity and pharynx. Applying attributable fractions from the literature, we found the average alcohol-attributable annual incidence ranged from 20.05 per 100,000 for female breast cancer to 0.24 per 100,000 for female larynx cancer.

Methodology: The average attributable fraction was identified by cancer type based on a meta-analysis of the literature[68], and applied to incident cancer cases based in Barnstable County.

Table 25. Alcohol-attributable Cancer Incidence, Barnstable County Residents, 2005-2009

Cancer Site/Type	Obs	Average Yearly Rate per 100,000	Average Alcohol AF	Alcohol-attributable Rate
Breast				
Male	14	1	-	-
Female	1,443	134	0.15	20.05
Colon / Rectum*				
Male	434	40	0.07	2.97
Female	400	37	0.07	2.73
Esophagus				
Male	93	9	0.25	2.15
Female	34	3	0.19	0.59
Larynx				
Male	49	5	0.27	1.21
Female	15	1	0.18	0.24
Liver and Intrahepatic Bile Ducts				
Male	83	8	0.14	1.06
Female	28	3	0.12	0.30

Oral Cavity & Pharynx				
Male	153	14	0.47	6.63
Female	67	6	0.32	2.00

Data Source: Massachusetts Cancer Registry; Centers for Disease Control and Prevention National Program of Cancer Registries (NPCR) Cancer Surveillance System, January 2014 data submission; National Cancer Institute, Population data from the 1969-2012 US Population Data File.

Appendix B: Treatment and Recovery

Sub-Analysis: Incidence of IDU-related HIV Infection in Barnstable County, 2012

Indicator Description: This indicator describes the number and proportion of people living with HIV/AIDS (PLWH/A) in Barnstable County who were exposed to HIV through injection drug use (IDU).

Importance: These data inform the proportion of HIV infection that would have been preventable through services to injection drug users or in the absence of the injection drug use.

Data Source(s): MA DPH HIV/AIDS Surveillance Program, Data as of 1/1/2013.[69]

Summary: Using self-report data, 8% of Barnstable County residents living with HIV/AIDS reported being infected through injection drug use, compared to 20% of PLWH/A state-wide (Table 26). We estimate that IDU is responsible for 83 HIV infections among Barnstable County residents, 49 of whom are living and 34 who are deceased (Table 27). HIV/AIDS is more prevalent among males than females in Barnstable County; 87% of the 617 PLWH/A are male. By sex, 5% of males compared to 27% of females were exposed to HIV through IDU (not shown).

Methodology: Estimates on the number of new diagnoses (2009-2011) that were exposed to HIV through IDU is not available due to small numbers. We applied the proportion of overall PLWH/A from Barnstable County who indicated they were infected through IDU to the overall number of people who were living with HIV/AIDS or who were deceased from HIV/AIDS from Barnstable County on December 31, 2012. These data do not include individuals who were diagnosed with HIV and who died prior to January 1, 1999 or who were not in care on January 1, 1999. Temporal changes in HIV mode of transmission may not be captured through such estimation. Note that HIV/AIDS cases that were first diagnosed in another state are not included within these data.

Table 26. Proportion of HIV/AIDS New Diagnoses Overall PLWH/A Exposed by IDU through Dec 31, 2012 in MA by Exposure Mode

	MA	Barnstable County
New Diagnoses 2009-2011	8%	*
PLWH/A	20%	8%

Source: HIV Profile MA 2013[70], HIV Profile Barnstable County, 2013[69]

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Table 27. HIV/AIDS-related Morbidity and Mortality Attributable to Intravenous Drug Use, Barnstable County, through Dec 31, 2012

	N	%	HIV **Morbidity** Attrib. to IDU	HIV **Mortality** Attrib. to IDU
People living with HIV/AIDS	617	59%	49	
People reported with HIV/AIDS deceased	423	41%		34
Total	1040	100%		

Source: HIV Profile MA 2013[70], HIV Profile Barnstable County, 2013[69]

Appendix B: Treatment and Recovery

Sub-Analysis: Incidence of Hepatitis C Infection in Barnstable County, 2012

Indicator Description: This indicator presents the incidence of hepatitis C infection among young adults aged 15 – 25.

Importance: The majority of new hepatitis C infections are attributable to injection drug use (IDU); this indicator is one measure of IDU-associated morbidity[71]**.** Hepatitis C is also the top cause of cirrhosis and liver cancer in the United States.

Data Source(s): MA Department of Public Health, Bureau of Infectious Diseases, 2012.[72]

Summary: In 2012, 67 incident cases of hepatitis C infection (HCV) were reported among Barnstable County residents for an incidence rate of 344.3 per 100,000 population. IDU is thought to be responsible for a high prevalence of HCV among older users who have been using for at least 5 years; cumulative infection rates among younger individuals have decreased however incidence is 15 - >30% annually[71].

The distribution of hepatitis C cases has changed dramatically over the past decade due to increases in incidence among young adults[71]. In 2002, peak incidence was between ages 44-50. In 2011, two age peaks were apparent, one at age 25 and the other at 51.

Methodology: Hepatitis C infection is a reportable disease and is under consistent surveillance by the Massachusetts Department of Public Health (MA DPH). The data presented here have been reported to the MA DPH surveillance program through the Massachusetts Virtual Epidemiologic Network.

APPENDIX C.1.

Key Informant Interviews and Resource Map

Domain	Date	Agency	Person(s)
Harm Reduction	7/22/2014	AIDS Support Group of Cape Cod	Donna Mello
	9/8/14	Town of Barnstable, Department of Public Works	Robert Steen
	7/29/14	Cape Cod Cooperative Extension	Mike McGuire
	8/5/14	Barnstable County Health Department	Deirdre Arvidson, Marina Brock, George Heufelder
Law Enforcement	5/22/14	Cape and Island's District Attorney's Office	Kathy Quatromoni
	6/12/2014	Barnstable County Sheriff's Department	Roger Allen
	7/22/2014	Eastham Police Department	Deputy Chief Kenneth Roderick
	10/3/14	Barnstable Police Department	Lt. Michael Clark, Officer Jean Challies
	11/4/2012	Falmouth Police Department, Falmouth Prevention Partnership	Captain Jeff Smith
Prevention	6/2/2014	Barnstable County Sheriff's Department	Shaun Cahill
	6/2/2014	Mashpee Cares	Gail Wilson, Lynne Waterman, Captain Scott Carline
	6/4/2014	Town of Sandwich	Linell Grundman
	6/9/2014	Gosnold on Cape Cod	Patricia Mitrokostas
	6/25/2014	Barnstable Public Schools	Gina Hurley
	7/2/2014	Plain Talk	Zoe Wolf, Siobhan Henshaw, Lauren Wolk
	7/31/2014	Barnstable County School Administrators	Paul Hilton, Gina Hurley, Ken Jenks, Patrick Clark, Mike Carrier
	10/9/2014	Caron Student Assistance Program	Traci Wojciechowski
	6/30/2014	Cape Cod Collaborative	Paul Hilton
Treatment/ Recovery	6/2/2014	Cape Cod Community College	Regina Yaroch

Treatment/ Recovery	6/2/2014	Mashpee Human Services	Gail Wilson
	7/1/2014	Duffy Health Center	Heidi Nelson
	7/15/2014	Freedom from Addiction Network	Kate McHugh, Brenda Vasquez
	7/18/2014	What Happened Here Documentary	Sam Tarplin
	7/24/2014	Gosnold on Cape Cod	Ray Tamasi
	7/29/2014	Bureau of Substance Abuse Services	Brian Sylvester
	8/1/2014	Outer Cape Health Services	Sally Deane, Andy Lowe, Walter Phinney
	8/25/14	South Bay Mental Health	Glen Ilacqua
	10/7/14	South Bay Mental Health	Kim Arouca, Amanda Trujillo, Krysten Rignanese

APPENDIX C.2.

Resource Inventory

	Type	Name	Organization	Town
Harm Reduction	Prescription Drug Drop-Off	Barnstable Police Department		Hyannis
	Prescription Drug Drop-Off	Brewster Police Department		Brewster
	Prescription Drug Drop-Off	Chatham Police Department		Chatham
	Prescription Drug Drop-Off	Dennis Police Department		Dennis
	Prescription Drug Drop-Off	Falmouth Police Department		Falmouth
	Prescription Drug Drop-Off	Harwich Police Department		Harwich
	Prescription Drug Drop-Off	Mashpee Police Department		Mashpee
	Prescription Drug Drop-Off	Orleans Police Department		Orleans
	Prescription Drug Drop-Off	Provincetown Police Department		Provincetown
	Prescription Drug Drop-Off	Sandwich Police Department		Sandwich
	Prescription Drug Drop-Off	Truro Police Department		Truro
	Prescription Drug Drop-Off	Wellfleet Police Department		Wellfleet
	Prescription Drug Drop-Off	Yarmouth Police Department		Yarmouth
	Syringe and Needle Disposal	AIDS Support Group of Cape Cod		Hyannis
	Syringe and Needle Disposal	AIDS Support Group of Cape Cod		Provincetown
	Syringe and Needle Disposal	Barnstable County Complex		Barnstable
	Syringe and Needle Disposal	Bourne Fire Department		Buzzards Bay
	Syringe and Needle Disposal	Brewster Fire Department		Brewster
	Syringe and Needle Disposal	Chatham Fire Department		Chatham
	Syringe and Needle Disposal	COMM Fire Department		Centerville
	Syringe and Needle Disposal	Cotuit Fire District		Cotuit

	Syringe and Needle Disposal	Eastham Fire Department		Eastham
	Syringe and Needle Disposal	Falmouth Fire Department		Falmouth
	Syringe and Needle Disposal	Harwich Transfer Station		Harwich
	Syringe and Needle Disposal	Mashpee Department of Public Works		Mashpee
	Syringe and Needle Disposal	Orleans Fire Department		Orleans
	Syringe and Needle Disposal	Provincetown Fire Department		Provincetown
	Syringe and Needle Disposal	Town of Dennis Inspectional Sevices		Dennisport
	Syringe and Needle Disposal	Truro Transfer Station		Truro
	Syringe and Needle Disposal	Wellfleet Fire Department		Wellfleet
	Syringe and Needle Disposal	Yarmouth Fire Department		South Yarmouth
Law Enforcement	Criminal Justice	Barnstable Action for New Direction (Drug Court)	Massachusetts Trial Court	Barnstable
	Criminal Justice	Barnstable County Community Corrections	Office Commissioner of Probation	Hyannis
	Criminal Justice	Barnstable County Correctional Facility	Barnstable County Sheriff's Office	Bourne
	Criminal Justice	District Attorney Juvenile Diversion Program	District Attorney's Office	Cape and Islands
	Criminal Justice	District Attorney Youthful Diversion Program	District Attorney's Office	Cape and Islands
	Criminal Justice	Cape Cod Drug Task Force		Cape-wide
Prevention	Community Coalition	Falmouth Substance Abuse Commission		Falmouth
	Community Coalition	Freedom from Addiction Network		Cape-wide
	Community Coalition	Lower Cape Community Anti-Drug Network (CAN)		Lower Cape
	Community Coalition	Mashpee Cares		Mashpee
	Community Coalition	Sandwich Substance Abuse Prevention Task Force		Sandwich
	Prevention	Barnstable County Sheriff's Youth Academy	Barnstable County Sheriff's Office	Barnstable
	Prevention	Falmouth Prevention Partnership	Gosnold Prevention Department	Falmouth
	School Based	Drug Education Presentations	Barnstable County	Cape-wide

	Prevention		Sheriff's Office	
	School Based Prevention	G.R.E.A.T. Program	Barnstable County Sheriff's Office	Mashpee
	Youth Engagement	Falmouth Together We Can		Falmouth
	Youth Engagement	Nauset Together We Can		Lower Cape
	Youth Engagement	Plain Talk		Cape-wide
Treatment/ Recovery	Client Services	Bridge to Hope	Cape Cod Council of Churches	Barnstable
	Client Services	Recovery Without Walls		West Falmouth
	Community Coalition	Substance Abuse in Pregnancy Task Force		Falmouth
	Detox	Gosnold Treatment Center	Gosnold	Falmouth
	Inpatient Treatment	Emerson House	Gosnold	West Falmouth
	Inpatient Treatment	Gosnold at Cataumet	Gosnold	Cataumet
	Inpatient Treatment	Penikese		Penikese Island
	Inpatient Treatment	Miller House	Gosnold	Falmouth
	Medically Assisted Treatment	Cape Obstentrics and Gynecology		Falmouth
	Medically Assisted Treatment	Community Health Center of Cape Cod		Buzzards Bay
	Medically Assisted Treatment	Community Health Center of Cape Cod		Mashpee
	Medically Assisted Treatment	Duffy Office-Based Opioid Treatment	Duffy Health Center	Hyannis
	Medically Assisted Treatment	East Falmouth Family Practice		East Falmouth
	Medically Assisted Treatment	Falmouth Walk-In Medical Center		Falmouth
	Medically Assisted Treatment	Gosnold Treatment Center	Gosnold	Falmouth
	Medically Assisted	Habit OPCO Cape Cod	Habit OPCO	South Yarmouth

	Treatment			
	Medically Assisted Treatment	Harbor Community Healthcare		Hyannis
	Medically Assisted Treatment	Hyannis Family Medical Care		Hyannis
	Medically Assisted Treatment	Outer Cape Health Services		Wellfleet
	Medically Assisted Treatment	Private Practice Providers	Various	Cape-wide
	Outpatient Treatment	Duffy Behavioral Health Services	Duffy Health Centers	Hyannis
	Outpatient Treatment	Falmouth Human Services	Town of Falmouth	Falmouth
	Outpatient Treatment	Gosnold Counseling Center	Gosnold	Falmouth
	Outpatient Treatment	Gosnold/Thorne Counseling Center	Gosnold	Centerville
	Outpatient Treatment	Gosnold/Thorne Counseling Center	Gosnold	Mashpee
	Outpatient Treatment	Gosnold/Thorne Counseling Center	Gosnold	Orleans
	Outpatient Treatment	Gosnold/Thorne Counseling Center	Gosnold	Pocasset
	Outpatient Treatment	Gosnold/Thorne Counseling Center	Gosnold	Provincetown
	Outpatient Treatment	Harwich Youth Counselor	Town of Harwich	Harwich
	Outpatient Treatment	Mashpee Human Services	Town of Mashpee	Mashpee
	Outpatient Treatment	Monomoy Community Services		Chatham
	Outpatient Treatment	Private Practice Providers	Various	Cape-wide
	Outpatient Treatment	South Bay Mental Health		Mashpee
	Mutual-support Meeting	Al-Anon		Cape-wide
	Mutual-support Meeting	Alateen		Cape-wide
	Mutual-support Meeting	Alcoholics Anonymous		Cape-wide
	Mutual-support Meeting	Grandparents Raising Grandchildren Support Group		Hyannis

	Mutual-support Meeting	Learn to Cope		West Yarmouth
	Mutual-support Meeting	Mothers Helping Mothers		Falmouth, Hyannis
	Mutual-support Meeting	Narcotics Anonymous		Cape-wide
	Mutual-support Meeting	Parents Supporting Parents		Mashpee
	Mutual-support Meeting	Students Achieving Recovery Together	Cape Cod Community College	West Barnstable
	Sober Home	Various (N =~ 27, minimum)		Cape-Wide

APPENDIX D. DESCRIPTION OF DATA SOURCES AND BIBLIOGRAPHY

DESCRIPTION OF DATA SOURCES

- **U.S. Census:** Information describing the Massachusetts and Barnstable County population was obtained from the Census 2010.

- **Behavioral Risk Factor Surveillance System (BRFSS):** The BRFSS is a national survey administered on an ongoing basis by the National Centers for Disease Control and Prevention (CDC) to adults (age 18+) in all 50 states and several districts and territories. The instrument collects data on adult risk behaviors, including alcohol abuse. BRFSS defines heavy drinking as adult men having more than two drinks per day and adult women having more than one drink per day, and binge drinking as males having five or more drinks on one occasion and females having four or more drinks on one occasion. The most recent data available are from 2013.[73] Both state and national data are available. Web address: http://www.cdc.gov/brfss.

- **Compressed Mortality File, National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC):** The Compressed Mortality File is a county-level national mortality and population database spanning the years 1968-2011. Compressed Mortality data are updated annually. The number of deaths, crude death rates or age-adjusted death rates can be obtained by place of residence (total U.S., Census region, Census division, state, and county), age group, race (years 1968-1998: White, Black, and Other; years 1999-present: American Indian or Alaska Native, Asian or Pacific Islander, Black or African American, and White), Hispanic origin (years 1968-1998: not available; years 1999-present: Hispanic or Latino, not Hispanic or Latino, Not Stated), gender, year of death, and underlying cause of death (years 1968-1978: 4 digit ICD-8 codes and 69 cause-of-death recode; years 1979-1998: 4-digit ICD-9 codes and 72 cause-of-death recode; years 1999-present: 4-digit ICD-10 codes and 113 cause-of-death recode), and urbanization level of residence for years 1999-present (per the 2006 or the 2013 NCHS Urban-Rural Classification Scheme for Counties). Confidentiality restrictions include the following: all sub-national data representing zero to nine (0-9) deaths or births are suppressed (effective 5/23/2011). Corresponding sub-national denominator population figures are also suppressed when the population represents fewer than 10 persons. Additional constraints apply to infant mortality statistics for infant age groups and live births denominator figures for the 1999-2008 data (effective 2/15/2012). For more information, see http://www.cdc.gov/nchs/data_access/cmf.htm.

- **Fatality Analysis Reporting System (FARS):** FARS was created by the National Highway Traffic Safety Administration (NHTSA) and contains data on all fatal traffic crashes within the 50 States, the District of Columbia, and Puerto Rico. To be included in FARS, a crash must involve a motor vehicle traveling on a traffic way customarily open to the public and result in the death of a person (occupant of a vehicle or a non-occupant) within 30 days of the crash. FARS has been operational since 1975 and has collected information on over 989,451 motor vehicle fatalities and collects information on over 100 different coded data elements that characterize the crash, the vehicle, and the people involved. Web address: http://www-fars.nhtsa.dot.gov/Main/index.aspx

- **National Survey on Substance Use and Health (NSDUH):** The NSDUH is a national survey administered annually by the Substance Abuse and Mental Health Services Administration (SAMHSA) to youth grades 6 through 12 and adults ages 18 and up. The instrument collects information on substance use and health at the national, regional and state levels. The advantage of NSUDH is that it allows comparisons to be made across the lifespan (that is, ages 12 and up). However, NSDUH is not as current as other data sources; as of this report, data at the state level are available from 2011-2012. Older data are included for trending and comparative purposes. NSDUH defines Illicit Drugs as marijuana/hashish, cocaine (including crack), heroin, hallucinogens, inhalants, or any prescription-type psychotherapeutic used non-medically; Binge Alcohol Use as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least one day in the past 30 days; Dependence or abuse based on definitions found in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV); and Serious Mental Illness (SMI) as a diagnosable mental, behavioral, or emotional disorder that met the criteria found in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and resulted in functional impairment that substantially interfered with or limited one or more major life activities. Web address: http://www.oas.samhsa.gov/statesList.cfm.

- **FBI UCR (Uniform Crime Reports):** This website contains several annual statistical publications, such as the comprehensive *Crime in the United States*,[61] which are produced from data provided by nearly 17,000 law enforcement agencies across the United States.

- **Massachusetts Registry of Vital Records and Statistics (MA-RVRS):** The electronic death file maintained by the MA-RVRS, MA Department of Public Health contains death certificate data on all deaths among MA residents and deaths among non-MA residents that occur in Massachusetts. Included in this file are International Classification of Disease (ICD) codes on

the underlying and associated causes of these deaths, which are generated from text on the death certificate.

- **MA-Emergency Department Discharge Database (MA-EDD):** This statewide database, maintained by the MA Division of Health Care Finance and Policy, captures billing, demographic and discharge diagnosis data on all emergency department discharges at all MA acute care hospitals, (excluding federal, psychiatric, or rehabilitation hospitals). Up to six discharge diagnosis fields (ICD coded) are recorded, and the state mandate submission of external cause of injury codes for discharges in which the principal discharge diagnosis is an injury. Cases admitted to the hospital are not included.

- **MA- Inpatient Hospital Discharge Database (MAHDDS):** This statewide database, maintained by the MA Division of Health Care Finance and Policy, captures billing, demographic and discharge diagnosis data on all inpatient hospitalizations at all MA acute care hospitals, (excluding federal, psychiatric, or rehabilitation hospitals). Up to 16 discharge diagnosis fields (ICD coded) are recorded, and the state mandates submission of external cause of injury codes for discharges in which the principal discharge diagnosis is an injury.

- **Massachusetts Youth Risk Behavior Survey (MYRBS):** The MYRBS is conducted every two years by the Massachusetts Department of Elementary and Secondary Education (ESE) with funding from the United States Centers for Disease Control and Prevention (CDC).[8] The survey monitors youth risk behaviors related to the leading causes of morbidity and mortality among adolescents. Since 1993, the MYRBS has surveyed public high school students from a scientifically selected random sample of schools across the Commonwealth. The CDC used a two-stage sampling method to produce representative samples of students in grades 9 – 12; all public schools with at least one of grades 9 through 12 were eligible to participate. In the first stage, schools were selected with a probability proportional to school enrollment size. In the second stage, classes of a required subject or required period were selected randomly. The overall response rate (i.e., the school response rate multiplied by the student response rate) was 65% for the MYRBS. All data are self-reported by students, and thus are subject to error for reasons such as inaccurate recall of events or answers to questions that reflect what students think survey administrators would want to hear.

- **National Crime Victimization Survey (NCVS):** The NCVS is a survey of criminal victimization by the Bureau of Justice (BOJ) Statistics at the Department of Justice conducted since 1973. This nationally representative sample reports on the frequency, characteristics and

consequences of criminal victimization in the United States. The survey allows the BOJ to estimate likelihood of victimization by rape or sexual assault, robbery, aggravated and simple assault, theft, household burglary, and motor vehicle theft for the population as a whole as for certain population subgroups. The NCVS is the largest national forum for victims to describe the impact of crime and characteristics of violent offenders. The latest year of data available is 2013.[74]

OTHER DISCUSSION POINTS

- One study designed to estimate the economic cost of excessive drinking by state for 2006 allocated component costs from the 2006 national estimate to states for total, government, binge drinking and underage drinking costs using differences in state wages to adjust for productivity losses [50]. Estimates for the state of MA estimated total cost to be 5,112.6 million total cost, with $1.76 per drink and $794 per capita. Governmental cost estimated at $2,173.8 million, $0.75 per drink and $448 per capita. Government costs were 42.5% of the total cost. Healthcare costs were estimated at 631.2 million, making up 12.3% of the total costs; productivity costs at 3,902.7 making up 76.3% of total cost, and other costs at 578.7 million and 11.3% of total costs. (100% across healthcare, productivity vs. other). Other includes costs associated with property damage due to crimes; criminal justice system costs, including costs for police protection, the court system, correctional institutions, private legal costs, and alcohol crimes (e.g., driving under the influence, liquor law violations, and public drunkenness); motor vehicle crashes; property damage from fire; and special education related to fetal alcohol syndrome.

- Cummings et al.[75]: In the sample with alcohol abuse or dependence (model 1.1), persons with private insurance but without coverage for alcohol abuse treatment (marginal effect=–2.6%, p<.01) and those with unknown coverage for alcohol abuse treatment (marginal effect=–2.4%, p<.05) were less likely than the uninsured to receive alcohol abuse treatment in a specialty setting. After the sample was restricted to persons with alcohol dependence (model 1.2), privately insured respondents with known coverage for alcohol abuse treatment were more likely than the uninsured to receive alcohol abuse treatment in a specialty setting (marginal effect=2.8%, p<.01). In other words, among those with alcohol dependence, the marginal effect indicated that the predicted percentage of those who received any specialty treatment increased from 6.7% among the uninsured to 9.5% among the privately insured with known coverage for alcohol abuse treatment.

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APPENDIX E. BARNSTABLE COUNTY REGIONAL SUBSTANCE ABUSE COUNCIL (RSAC) MEMBERS

Regional Substance Abuse Council Members
As of 1/1/15

First Name	Last Name	Title	Company/Organization
Beth	Albert	Director	Barnstable County Human Services
Melissa	Alden	Police Officer	Yarmouth Police Department
Roger	Allen	Clinical Director, Inmate Services	Barnstable County Sheriff's Department
Deidre	Arvidson	Public Health Nurse	Barnstable County Dept. of Health & Environment
Cheryl	Bartlett	Executive Director	CCHC Substance Abuse Initiative
Ronald	Bergstrom	Speaker	Assembly of Delegates
Shaun	Cahill	Youth Program Director	Barnstable Sheriff's Office
Karen	Cardeira	Director, Falmouth Human Services	Falmouth Substance Abuse Commission
Jennifer	Cullum	Town Councilor	Barnstable Town Hall
David	Dunford	Selectman - Orleans	MA Municipal Assoc. Municipal Opiate Addiction & Overdose Prevention Task Force
Elisabeth	Griffin	School Adjustment Counselor	Upper Cape Technical High School
Linell	Grundman	Human Services Advisory Committee	Sandwich Human Services Advisory Committee
Thomas	Guerino	Town Administrator	Bourne Town Hall
Lisa	Guyon	Community Benefits	Cape Cod Healthcare
Paul	Hilton	Executive Director	Cape Cod Collaborative
Randall	Hoskinson, Jr.	Clinical Research Program Director	Brown University/Rhode Island Hospital
Sheila	House	Youth Counselor	Harwich Town Hall
Randy	Hunt	Representative	5th Barnstable District
John M.	Julian	Judge	Barnstable District Drug Court
Edward	Kulhawik	Police Chief	Eastham Police Department
Mary	LeClair	Former County Commissioner	Mashpee Cares
Sheila	Lyons	County Commissioner, Chair	Barnstable County Commissioners
Kate	McHugh		Freedom From Addiction Network
Donna	Mello	Harm Reduction Manager	AIDS Support Group of Cape Cod
Patty	Mitrokostas	Prevention Program Director	Gosnold on Cape Cod
Heidi	Nelson	CEO	Duffy Health Center
Andrew	Nelson	District Representative	Office of Congressman Keating
Gerry	Panuczak	Human Resources Director	Chatham Town Hall
Kathy	Quatromoni	Community Liaison	C&I District Attorney's Office
Sue	Rohrbach	District Director	Office of Senator Dan Wolf
Sean	Sheehan	Assistant Chief Probation Officer	Barnstable First District Court

First Name	Last Name	Title	Company/Organization
Jean	Talbert	Physician	Substance Abuse in Pregnancy Task Force
Ray	Tamasi	Executive Director	Gosnold on Cape Cod
Gail	Wilson	Director	Mashpee Human Services
Regina	Yaroch	Adjunct Professor	Cape Cod Community College Arts & Communication

Staff Support:

Vaira Harik, Senior Project Manager, Barnstable County Department of Human Services

Samantha Kossow, Coordinator RSAC, Barnstable County Department of Human Services

Kathie Callahan, Administrative Assistant, Barnstable County Department of Human Services

Technical Assistance:

Carl Alves, MassTAPP

BARNSTABLE COUNTY
HUMAN
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Analysis of Substance Abuse on Cape Cod: A Report to the Community

March, 2015

Beth Albert, Director

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