Need Assessment Study of Mental Health and Substance Use Disorders and Service Utilization among Adult Population of Puerto Rico

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EXECUTIVE SUMMARY

The Behavioral Sciences Research Institute, a division of the University of Puerto Rico Medical Sciences Campus, conducted a need assessment study to investigate the prevalence rates of serious mental illness and substance use disorders; service utilization and barriers to treatment among a representative sample of the adult population of Puerto Rico from 18 to 64 years of age. Data was collected by face-to-face interviews from 2014 to 2016 using a computer assisted interviews at the respondent's home. A total of 3,062 interviews were completed from 3,654 eligible subjects for a response rate of 83.8%.

The purpose of this study is two-fold. First, a current analysis of the rate of mental health and substance abuse disorders among the adult population in the island is imperative as the data is significantly outdated with the last comprehensive mental health study being completed in 1985. A substance abuse study was performed in 2008, but the demographic, political and particularly economic landscapes of Puerto Rico have dramatically changed since then. Second, developing an up-to-date understanding of the prevalence for these disorders will allow policy makers to accurately identify the unmet mental health and substance abuse treatment needs of the population. This current data will enable policy makers to allocate budgets accordingly.

Key findings: Serious Mental Illness in Puerto Rico

- In Puerto Rico 7.3% of adults 18 to 64 years old meet last year criteria for a Serious Mental Illness (SMI). This percent represents an estimate of **165,497** adults who are in need for mental health services.

- When the prevalence rates are segmented by gender, it is observed that women have slightly higher rates (4.2%) of SMI than men (3.1%).

- Adults between the ages of 46 to 64 years have higher rates of last year SMI. Around four in 100 (4.3%) adults between 46 to 64 years old meet criteria for a SMI.

- The highest prevalence rates for SMI were observed among residents in the North (10.5%), East (9.9%) and San Juan (8.4%) health regions.

- Approximately 4 in 10 adults 18 to 64 years old (36.1%), who meet criteria for a serious mental illness had not received mental health services in the specialty sector in the last 12 months of the interview.

- The 46 to 64 age group shows the highest percentage of individuals who meet criteria for a SMI and received any specialized treatment (39.9%).

- In three health regions- Metro-North (73.7%), North (73.6%) and East (72.4%) - around 7 out of 10 of their residents reported specialized service use in the last 12 months.

- The most frequently mentioned barrier for receiving treatment among adults who met criteria for a SMI was the thought that the problem would get better on its own (63.0%) and the wish to handle the problem on their own (61.2%).

- An estimated of 25,732 adults 18 to 64 years old (15.5%) had serious mental illness and a co-occurring substance use disorder during the same period.

Key Findings: Psychiatric Disorders: Excluding Substance Use Disorders in Puerto Rico

Psychiatric disorders were clustered into three main categories: mood disorders, anxiety disorders and developmental neuropsychiatric disorder (attention deficit disorder with hyperactivity). We excluded substance use disorders in these prevalence rates. The main findings of 12-month prevalence rates of psychiatric disorders are the following:

- In Puerto Rico, approximately 2 in 10 adults aged 18 to 64 years old (18.7%) meet last year diagnostic criteria for a DSM-IV psychiatric disorder. When including substance use disorders (*excluding nicotine dependence*) in the rate of a psychiatric disorder the 12-month prevalence rates in Puerto Rico increases to 23.7%.

- Anxiety disorders - such as generalized anxiety, panic, social phobia and agoraphobia-are the most common disorders in Puerto Rico, affecting 12.5% of the adults 18 to 64 years old.

- Mood disorders are the second most common disorders in Puerto Rico affecting 10.4% of the population 18 to 64 years old.

- Around 1 in 10 adults in the island (9.7%) live with a major depressive disorder.

- Overall, a total of 10.5% of women in Puerto Rico met last year diagnostic criteria for a psychiatric disorder, compared to 8.2% of the men.

- A statistically significant difference by gender *(p≤.05)* was observed in the prevalence rates of major depression, dysthymia and general anxiety by gender. Women are more likely to be diagnosed with these conditions than men.

- Puerto Rican adults between 46 to 64 years showed the highest prevalence rates of any psychiatric disorders (8.5%) than the rest of the age groups.

Key Findings: Substance Use Disorders in Puerto Rico

- In Puerto Rico, 11.5% of adults 18 to 64 years old met DSM IV diagnostic criteria for a substance use disorder in the preceding 12 months of the interview.

- An estimated 2.5% of the adult population in Puerto Rico are in need of substance use services since they meet criteria for last year substance dependence disorder. This represents a total of **57,301** adults in Puerto Rico.

- Five in 100 adults 18 to 64 in Puerto Rico (5.2%) meet DSM IV criteria for last year alcohol abuse disorder and 1.5% met criteria for last year alcohol dependence.

- One in 20 adults in Puerto Rico (5.1%) met criteria for nicotine dependence in the last 12 months preceding the interview.

- A statistically significant difference *(p≤.05)* was observed in the prevalence rates of nicotine dependence, alcohol abuse, alcohol dependence and drug abuse. Women in Puerto Rico between 18 to 64 years old had less probability to be diagnosed with a substance use disorder than men.

- The 26 to 45 age group showed the highest last year prevalence rates for any substance use disorder (5.1%), specifically for nicotine dependence (2.4%), any alcohol use disorder (2.4%), and any drug use disorder (1.5%).

- Residents from the San Juan health region have the highest 12 month prevalence rate of alcohol use disorder (8.9%), alcohol abuse (8.2%), and alcohol dependence (2.5%).

- Approximately 7 out of 10 adults (69.8%) who met criteria for alcohol dependence had not received any treatment (i.e., unmet need) in the last 12 months.

- Nearly six in 10 adults (56.4%) who met criteria for drug dependence had not received any specialty service in the last 12 months of the interview.

- Approximately 7 out of 10 adults (67.4%) who are in need for substance services (since meet criteria for a last year substance dependence disorder) did not receive any treatment during the same period. Males with a substance dependence disorder have the largest percent (48.7%) of individuals who did not receive any treatment.

- Over 7 out of 10 adults with substance dependence and perceived unmet need for treatment identified three common held beliefs that represented major barriers: problem would get better o itself (78.9%), wanted to handle their problems on their own (72.4%) and the belief that treatment would not work (71.7%).

SECTION I: INTRODUCTION

A. Background

The Behavioral Sciences Research Institute (BSRI) is focused on conducting scientific research and is adjoined to the Deanship of Academic Affairs of the University of Puerto Rico's Medical Sciences Campus. The Institute has evolved from more than 35 years of continuous multidisciplinary work in the areas of mental health and substance abuse, as well as pediatric asthma. The BSRI has conducted population based epidemiologic surveys of the adult and child population of Puerto Rico, population based clinical trials, and has translated, adapted and tested psychometric properties for use among Hispanic populations of five adult psychiatric structured and semi-structured interviews, in addition to several epidemiological measures of risk and protective factors and mental health service utilization for the adult and child population of Puerto Rico.

With funding from the Substance Abuse and Mental Health Service Administration (SAMHSA), the Puerto Rico Mental Health and Anti-Addiction Services Administration (MHAASA) sub-contracted the BSRI to carry out an Island wide population need assessment study of psychiatric and substance use disorders (PSUD) among the adult population of Puerto Rico 18 to 64 years of age. The main purpose of the study was to determine the prevalence of PSUD, patterns of service use and barriers to care by those in need of mental health and substance abuse treatment. Need of services in this report is defined as meeting criteria for a severe mental illness (SMI). According to the 1993 Federal Register mandated by Public Law 102-321, SMI is defined as any adult 18 years and above who currently or at any time during the past year had a diagnosable mental, behavioral or emotional disorder of sufficient duration to meet diagnostic criteria specified with the Diagnostic and Statistical Manual of Mental Disorders (DSM IV), that results in

substantially impairment, that interferes with or limits the person's role or functioning in family, work, relationships or community activities".[1] The population that meets criteria for any substance dependence disorder is also considered in need of services. The study provides current information to MHAASA on the need, and unmet need of mental and substance abuse treatment services that can inform the planning and delivery of appropriate services.

B. Significance

Since 2008, a deep economic recession has been affecting the Island. As a consequence of this recession, Puerto Rico has been facing major chronic stressors that are likely to have a negative impact on mental health: high rates of unemployment/ underemployment, poverty, a drastic population loss, and higher crime rates. Since the beginning of the recession, dramatic changes have been observed in several indicators of economic instability. For instance, the unemployment rate was relatively stable from 2001 (10.6%) to July 2008 (11.0%), but then rose up to 17.0% in May 2010. [2] During the same period, unemployment data for the U.S. as a whole ranged from 5.8% to 9.6%. [3] As of July 2016, Puerto Rico has experienced a decline in the unemployment rate, currently at 11.4%, but has not come down to that observed at the beginning of 2000 [2] and is more than double the U.S. average of 5 percent [3]. It is possible though, that this lowering rate of unemployment may be related to the massive migration and the rise in the percent of people that are out of the labor force. In 2016, 40.2% of Puerto Rico's working-age population (ages 15-64) participated in the labor force [4], which means that approximately 60% of the working age population is out of the labor force. Associated with the unemployment rates are high poverty rates among the Island's residents. It is estimated that in 2015, 46.2% of Puerto Ricans lived under the poverty level. [5] Poverty is dramatically higher in Puerto Rico as compared with 13.5% in the U.S. [6]

With jobs so scarce, high poverty levels, and a large population out of the labor force, Puerto Rico is experiencing a drastic population loss. According with data from the U.S Census Bureau,

Puerto Rico's population has been decreasing for nearly a decade, and that trend has accelerated in recent years. Overall, the Island's population was an estimated 3.47 million in 2015, down 334,000 from 2000, representing a 9% decline. [7] Three-quarters of this population loss has taken place since 2010, the same year where the highest unemployment rate was reported. During the past 5 years about 64,000 Puerto Ricans left the Island per year, and most were young professionals.[8] One of the professionals with the highest percentage of migration are healthcare professionals, specifically physicians. The debt owed by Puerto Rico's Health Insurance Administration (ASES) poses a significant threat to maintaining an operational health care system. This debt has triggered a cascade of developments, including longer waits for clinical and therapeutic procedures, overcrowded emergency rooms, attempts to charge patients directly for care, and increasingly, an exodus from Puerto Rico of physicians. According with the College of Physicians and Surgeons in 2014 a total of 364 physicians moved out of the island and in 2015 around 500 physicians left. [9, 10]

Furthermore, there is a relation between economic crisis and higher crime rates.[11] The number of homicides and other crimes almost always increases dramatically when times get tough; the worse the economy gets the more crimes are likely to occur. Although homicide crimes were down by over 50% since a high of 31 per 100,000 inhabitants in 2011 [12], in 2015 the homicide rate in Puerto Rico was 16.8 for every 100,000 inhabitants [12,13], placing the island in the 9th position in all Latin America countries with high homicides rates and exceeding other bigger countries such as Mexico. [12] These rates are considerably higher than those reported for the U.S in 2014. In 2014, the homicide rate in the U.S was 4.5 for every 100,000 inhabitants. [14] The chronic stressors described above have been associated with the onset and exacerbation of mental health and substance use disorders. [15] People who experience unemployment and impoverishment have significantly greater risk of mental health problems, such as depression alcohol use disorder and

suicide. [16, 17] Recession can widen income inequalities in societies, which is also likely to increase the risk of poor mental health.

Yet, in spite of the fact that indicators of social disruption are traditionally associated with increased risk for mental illness, these indicators are much better now in the island than they were 30 years ago when the first island wide psychiatric epidemiology study was published. [18] At that time criminality was rampant, unemployment was higher than 20%, and 60% of the population was under the poverty level. [19] Although the island had high rates of these known risk factors for psychopathology, the rates of last year psychiatric disorders were not significantly higher (16.0%) than those reported in similar psychiatric epidemiology studies carried out in the United States. When further analyses statistically adjusted for several demographic variables (education, age, and gender) were made and compared to Mexican Americans from Los Angeles, the rates of alcohol and depressive disorders were lower in the island than in that site of the US, but the rates of other psychiatric disorders remained higher. [19] It was hypothesized that these findings were related to possible singular coping styles and high levels of social and family support networks common in the Puerto Rican population. Given these prior findings, it was expected that as before, the rates of psychiatric disorders in the island would not be affected by the usual indicators of risk (i.e. poverty, unemployment, and criminality). However, as published previously, prevalence rates of psychiatric disorders were expected to rise by the year 2000 to 25% just based on mathematical epidemiologic projections. [20] In fact, there is evidence that the rates of psychiatric disorder increased considerably in the US based on the last epidemiologic study carried out in 2001 (last year prevalence of 26.2% any CIDI/DSM-IV disorder) [21] since the first rates were published by the Epidemiologic Catchment Area study in 1984 (last year prevalence of any DIS/DSM-III disorder was 20%). [22] Another epidemiologic study carried out with a representative sample of Asian and Latinos in the US (NLAAS study) [23] showed lower rates of any last year CIDI/DSM – IV among the Puerto Rican population (21.2%) as that of the entire US population (26.2%). [21]

These rates were nevertheless similar to the original Epidemiologic Catchment Area (ECA) study. Differences in rates between the initial studies carried out in the 80s and those carried out in the beginning of the 2000s have been attributed to methodological differences between the instruments used pertaining to how the clinical significance or impairment of symptoms was assessed.[24] It is also possible that rates of disorder increased with changes in the psychiatric nosology (from DSM III to DSM IV) or just increased due to the time elapsed between the two surveys.

Similar to scarcity of information regarding the prevalence of psychiatric disorders in the island, there is relatively no recent epidemiologic data on the use of mental health services by the adult population in the island. Utilization data on mental health services in Puerto Rico is essential, not only because of the expected rise on prevalence of psychiatric disorders, but also because the island went through dramatic policy changes in the delivery of mental health services that might have affected the patterns of services utilization rates. The most recent data available was provided by Alegría et al (1991). This study defined need for services as the population who exhibited moderate or high psychiatric symptoms as well as psychosocial dysfunction as measured by the Psychiatric Symptom and Dysfunction Scale. [25] The study referred to a representative sample of the poor population of the island. Results of the study showed that 31.5% of those in need for mental health services received services in the physical or mental health sector, however, only 17.9% received services in the mental health sector. [25] In another study, representative of the adult population of the island, need for mental health services was defined as meeting last year criteria for a DSM III disorder including substance use disorders.[26] In this study 42.5% of those in need received treatment in the physical and mental health sector, while only 16.9% used the specialty mental health, a percentage very similar to that of the previous study. However, these studies did not define need for mental health services in the way required by the Federal Register.

At the time of the first epidemiology study of mental disorders in the island in 1987 [18], Puerto

Rico's mental health and substance use services for the medically indigent were provided by the

MHAASA government agency in community mental health centers distributed across the island.

Since 1995, the Island's public health system changed to a private managed care model by which

treatment is provided by Independent Provider Organizations subcontracted by the government

under a capitation system. Prior to this change in the provision of health and mental health

services, Alegría and colleagues (2001) carried out a mental health needs assessment study, and

were able to compare the rates of mental health needs (measured through psychiatric symptoms

accompanied by impairment) prior and after the change to a manage care model. The results of

this study showed that access to mental health services improved for the non-poor population but

no change in access was observed for the poor. [27] Throughout the past 16 years, the mental

health and substance use related services have gone through different policy changes including

contracting directly with Mental Behavioral Health Organizations, the inclusion of mental health

providers in physical health settings and most recently back to contracting with manage care

organizations. It is unknown how these system changes have affected the rates of service

utilization and unmet need in the Island, particularly for those with public insurance.

More recent information is available for rates of last year substance use disorders but it seems

that the rates have not changed substantially in the last years. In the decade of the 80s the 12

month prevalence rate of alcohol abuse and or dependence was 4.9% [18], whereas in the 1998

Need Assessment Program for Substance Abuse Service Report [28], the prevalence was similar

(4.1%). A more recent study carried out in 2014-2015 of the Standard Metropolitan Area found a

prevalence rate of last year alcohol abuse and or dependence of 4.6%; (5.1% of abuse and 1.5%

of dependence). [30] Nevertheless, rates of drug abuse and/or dependence seem to fluctuate with

time. In 1987 the rates of last year drug abuse and/or dependence were not presented because

even the lifetime rates were very low (1.2%) with only 14 persons in the sample meeting lifetime

criteria. [18] By 1998, the lifetime rate of drug abuse/dependence had increased to 4.3% of the

population and the last year prevalence was 1.3% of the population (1.1% for drug abuse and

0.5% for drug dependence). [28]

Data for the need for treatment among the population who meet criteria for substance use

disorders is more recent than that reported for the population who meet criteria for SMI. According

to estimates from the Puerto Rico Substance Abuse Need Assessment Report (2008), 88.5% of

adults who met criteria for an alcohol dependence disorder had not received any specialized

treatment during the previous year and an additional 60.6% of adults with a drug dependence

disorder reported not receiving specialized services during the same period. [31]

C. Objectives

This report presents the results of a population based epidemiologic study for mental and

substance use disorders conducted from 2014 to 2016. After more than 30 years, prevalence

rates of psychiatric disorders, including substance use disorders and need for mental health and

substance use treatment, in a representative sample of the adult population 18 to 64 years of the

island of Puerto Rico are assessed. The study was designed to achieve the following objectives:

1. Estimate the preceding 12-month prevalence of DSM-IV psychiatric and substance use
    disorders using an island wide probability sample stratified by the eight Health Regions.
    Substance use disorders include abuse and/or dependence of the following substances:
    nicotine, alcohol, and illicit drugs. Psychiatric disorders include major depressive disorder,
    bipolar disorder, dysthymia, generalized anxiety disorder, panic disorder, social phobia,
    agoraphobia and ADD/ADHD.

2.   Estimate the preceding 12 month prevalence of Serious Mental Illness (SMI). SMI is defined according to the 1993 Federal Register definition described in the background section (and changed to include meeting DSM-IV criteria) for the above mentioned psychiatric disorders as well as significant impairment in functioning.

3.   Estimate the use of specialized mental health and substance use services of the population in need in the preceding 12 months. Estimates are presented for the total island as well as segmented by gender, age group, and health region. Need of services refers to adults who meet criteria for a Serious Mental Illness (SMI) and/or substance dependence.

4.   Identify and quantify barriers to treatment for the population with unmet need of services.

SECTION II: METHODS AND PROCEDURES

A. Sample Design and Data Collection

The sample of the study is a household probability sample of adults from 18 to 64 year old living in mainland Puerto Rico (excluding the islands of Vieques and Culebra). Using Block Groups from the U.S. Bureau of Population and Housing of the 2010 Census for Puerto Rico as the primary sampling units, the Island territory was first stratified by eight health regions defined according to the Puerto Rico Health Insurance Administration (see Table 1).

Table 1. Health Regions according to the Puerto Rico Health Insurance Administration (ASES) in 2012							
San Juan	Metro-North	North	West	South-West	South-East	East	North-East
San Juan	Vega Alta Dorado Corozal Naranjito Comerío Toa Alta Toa Baja Bayamón Guaynabo Cataño	Vega Baja Morovis Ciales Manatí Barceloneta Florida Utuado Arecibo Hatillo Camuy Lares Quebradillas	Isabela Aguadilla Moca San Sebastián Aguada Las Marías Maricao Sabana Grande San Germán Lajas Cabo Rojo Hormigueros Mayagüez Añasco Rincón	Guánica Yauco Guayanilla Adjuntas Peñuelas Jayuya Ponce	Orocovis Villalba Juana Díaz Santa Isabel Coamo Barranquitas Aibonito Salinas Guayama Cayey Arroyo Patillas Maunabo	Aguas Buenas Cidra Caguas Gurabo San Lorenzo Yabucoa Humacao Naguabo Las Piedras Juncos	Trujillo Alto Carolina Loíza Canovanas Rio Grande Luquillo Fajardo Ceiba Culebra Vieques

The sample was designed to allow prevalence rate estimates by health region. Respondent selection followed a multistage cluster sampling procedure with a total of 340 Primary Sampling Units. In the first stage, a Census Block Group was made with probability proportional to size (number of adults in the target age group). The second selection stage consisted of a random selection of one block within each selected Census Block Group. In the third and final stage, a segment of approximately 20 to 40 occupied household units (OHUs) was randomly selected

within each block. Each block was identified and marked on satellite photos and delivered to field staff. To consider changes due to new construction and abandonment of household units, all occupied household units within the selected segments were approached. Selected occupied household units were screened for eligible individuals using the screening criteria described below, and the eligible respondent was randomly selected for interview using Kish tables [32]. Eighty two percent (82.3%) of the households approached (3654/4436) had at least one eligible respondent. Data was collected between May 2014 and June of 2016.

A household was selected for inclusion in the study if, the household had at least one person who was 18 to 64 years old, who spoke Spanish and who did not have any cognitive impairment that would incapacitate the candidate from participating in the interview. Homeless or transient adults and those living in institutions without families in the community were excluded from the sample of this study. Trained interviewers visited each household and listed all residents who met eligibility criteria to participate in the study. After the listing, interviewers selected one potential respondent using a random selection Kish table. [32] This table was designed to select adults 18 to 64 years old with a probability of one. No substitutions of other persons living in the same household were allowed. Interviewers proceeded to contact selected respondents and invite them to participate.

Participation in this study was voluntary. Selected respondents were provided with an informed consent form prior to the interview which explained participant rights, as well as methods of data safety and protection of confidential information. This consent form was approved by the Human Research Subjects Protection Office at the University of Puerto Rico, Medical Science Campus. In the case of minor participants (18-20 years) a parental consent was required. People who refused to participate were contacted at least three times by three different interviewers (the initial

interviewer, another interviewer, and field supervisor) in order to maximize the rate of participation.

Trained interviewers conducted Computer Assisted Personal Interviews at the respondents' home that lasted approximately an hour and a half. Participants received a $30 incentive for their time and collaboration with the study. A total of **3,062** interviews were completed from 3,654 eligible subjects yielding a response rate of **83.8%** (see Table 2).

Table 2. Final Response Rate of the Need Assessment Study		
	n	**%**
Sampling Units	340	
Sampling Units accessed	237	69.7
Number of occupied household units	5805	
Number of occupied household units screened	4436	76.4
Number of eligible respondents	3654	82.3
Number of completed interviews	**3062**	
Final Response Rate		**83.8**

B. Measurements

The interview protocol was composed of a structured psychiatric interview, sociodemographic characteristics questions, mental and substance use disorders, impairment in functioning, service utilization and barriers to care, as well as family and social support.

Psychiatric and Substance Use Disorders were assessed with version 21 of the Spanish World Mental Health Composite International Diagnostic Interview (WMH-CIDI). [33] The WMH-CIDI is a standardized diagnostic interview designed to assess current (past 12-month) mental health disorders according to the definitions and criteria of the Diagnostic and Statistical Manual of

Mental Disorders IV. [34] To this date the CIDI has not been updated to assess DSM V disorders and for this reason this study is not based on the DSM-V which is the most recent classification for psychiatric disorders published by the American Psychiatric Association. [35] The original WMH-CIDI instrument was translated and adapted by a bilingual team for use among Spanish speaking populations using a comprehensive process guided by a conceptual model that focused on cross-cultural equivalence in five dimensions (semantic, content, technical, criterion, and conceptual equivalence) following a cultural adaptation model described in detail elsewhere. [36] The Spanish translation of the WMH-CIDI has adequate concordance in clinical reappraisal studies with the Structured Clinical Interview for Axis 1 Disorders (SCID) for most DSM-IV psychiatric disorders. [37] We used this same method for the translation of the new items added to version 21 of the WMH-CIDI. The following psychiatric disorders were assessed to determine the prior-12 month's prevalence of major depressive disorder, dysthymia, bipolar, general anxiety, social phobia, agoraphobia, panic disorder, attention deficit and hyperactivity (ADHD). Prevalence rates for substance use disorders included nicotine, alcohol, and drugs. The term "drug" is used to refer to illicit drugs as well as prescription drugs used without the recommendation or prescription of a health professional, and used in greater amounts than recommended by the health professional, or used for any reason other than what a health professional indicated it should be used for.

Functional Impairment was assessed by the short version of the World Health Organization Disability Assessment Schedule (WHODAS 2.0) that measures past 30-day functioning. [38] The concurrent validity of the WHODAS 2.0 in relation to other impairment instruments has been found to be excellent for use across cultures, gender and age groups, as well as for different types of diseases and health conditions. [39] Previous versions of the Spanish translation of the WHODAS have shown good to excellent internal consistency in a Puerto Rican sample ($\alpha = 0.72$–0.95).[40] The IRT based scoring described in the WHODAS 2.0 manual [42] was used to score the short

version of the instrument. In this manual a composite of scores from ten different countries was described. A score of 22 corresponded to 7% of the population. In this sample a score of 36 corresponded to 7.3% of the sample. The recommended qualifiers based on the International Classification of Functioning, Disability and Health were used to determine a severe cutoff for the WHODAS short version in this sample; no problem responds to a score of 0-4 in the WHODAS, a mild problem is represented by a 5 to 24 score, a moderate problem is represented by a 25 to 59 score, a severe problem is represented by a 50 to 95 score, and a complete problem is represented by a 96 to 100 score. [38] We used a score of 26 and above to determine severe impairment in the WHODAS which corresponds to 15% of the study sample. We used this score because when it was combined with the prevalence rate of the population that met last year criteria for any SMI, 7.3% of the population met criteria for SMI, a rate similar to that reported previously by the Federal Register for the population of Puerto Rico (8.1%) [1].

Service Utilization was measured using the same questionnaire administered in the National Latino and Asian American Survey (NLAAS) of psychiatric disorders in the US. [41] The instrument measures the utilization of specialty mental health and substance abuse treatment, including professional health providers and hot lines. It also includes the general health sector and measures visits to primary care providers for mental health or substance use problems. The non-specialty sector includes use of self-help groups for mental health and substance use, spiritualists, "santeros", herbalists, chiropractors and internet support groups as well as groups of Alcoholic and Narcotics Anonymous and mental health support groups.

Perception of Need for Services was measured using the service utilization module from the National Latino and Asian American Study (NLAAS) [23]. This construct refers to an individual's own perceived need of treatment in the last 12 months. We measured perceived need among individuals who met criteria for a Serious Mental Illness and/or substance dependence in the last year and who also reported not receiving specialty services in the last year.

Barriers to Treatment were quantified according to specific factors which prevented those with perceived need of treatment from receiving the needed service. Barriers analyzed included structural, geographic barriers, lack of knowledge of services, insurance status, economic and stigma barriers. Respondents who reported having received no service in the specialty sector in the last year and also reported perceived need for services in the last 12 months were asked about seventeen specific potential barriers: 1) health insurance would not cover treatment; 2) felt better, didn't need help anymore; 3) problem would get better by itself; 4) concerned about treatment cost; 5) unsure where to go or who to see; 6) treatment wouldn't work; 7) concerned about what people would think about receiving treatment; 8) thought it would take too much time or be inconvenient; 9) wanted to handle the problem by itself; 10) could not get an appointment; 11) scared of being put in a hospital; 12) not satisfied with available services; 13) received treatment before and it didn't work; 14) problem didn't bother; 15) problem with transportation or scheduling; 16) no health insurance and 17) not comfortable discussing problems with a health professional.

Gender and Age: The gender of respondents was used as a dichotomous variable: a) male and b) female. The age of respondents was used as a categorical variable: a) 18-25, b) 26-45, and c) 46 years and older.

Educational Level*:* Respondents were categorized into four education categories: a) less than high school; b) completed high school or GED; c) some college or technical or vocational school; d) graduate school/some graduate studies.

Marital status*:* Respondents were categorized into four categories as follows: a) married or living with someone, b) separated or divorced, c) widowed, d) never married/single.

Monthly Household Income: Respondents were asked to disclose the monthly income derived from the salaries of all family members living in the household. In addition, families were asked

about other sources of income obtained from benefits such as pensions, Medicaid and Medicare benefits, social security and other government benefits. Total household monthly income was calculated as the sum of all types of income received by each family member in the household. For the present analyses, the household monthly income was grouped as a) less than $1,000, b) $1,000 to $1,999, c) $2,000 to $2,999 and d) $3,000 or more.

Household Composition: This variable represents the number of people who lived in the same household unit.

Employment status: This variable represents respondents' employment status at the time of the interview. Respondents were categorized into 4 employment categories: a) employed part-time; b) employed full-time (35 or more hours of work per week); unemployed (unemployed, and looking for work); c) not in the workforce (retired, homemaker, never worked, unemployed and not looking for work, students).

C. Interviewers, Supervision and Quality Control

All interviewers received a 3-day training organized by the BSRI with full supervision by Dr. Canino and Santiago-Batista. The BSRI has a pool of trained Puerto Rican interviewers, many of whom have worked for the Institute more than 15 years. The training consisted of detailed instructions about the screening and consent procedures, interviewing techniques and refusal conversion, the use of the computerized assisted program interview (CAPI), Dialogix and QDS Software, and the discussion of administrative topics regarding the study. Before the assignment of cases to interviewers, they went through an assessment process to evaluate their performance, specifically to verify that questions were read correctly and answered as recorded on the CAPI and that all the materials and forms (screening form, consent form, visit log sheet, incentive receipt) were completed. Interviewers were instructed to complete three audio-taped practice interviews with

family members and/or friends. These audio-taped practices were examined by the field supervisors and the project coordinator to assure they met our high standards of quality.

The first two full interviews of each interviewer were also reviewed and 20% of subsequent interviews were spot-checked for quality assurance. Random calls were also placed to families as an additional quality control activity. Data was reviewed monthly to check for outliers which might indicate an error in the data gathered. Ongoing quality control and data cleaning processes identified data inconsistencies that led to improvements in the computer-assistant interview. Quality control of interviewer's performance was also performed by listening to three randomly selected audio taped interviews of each interviewer. At the end of the study 20% of all completed interviews that were audiotaped were listened for quality control. Weekly meetings with all field supervisors, the project director and the principal investigator were conducted in order to disseminate information about the progress of the study. Also, periodic reports were provided to the principal investigator in order to monitor participation rates by region/interviewer.

Field supervisors were in charge of all recruitment efforts for the study according to the research design. They received a field manual that described the responsibilities and procedures of each phase of the study (enumeration, screening/recruitment and interview). The manual served as a teaching tool to ensure that the highest quality data was collected in the field and also helped supervisors lead their interviewers according to the specific rules established by the research protocol. Supervisors received a one-day training which explained in detail the steps to follow during the supervision of interviewers and received information on the procedures to follow for quality control, transfer of the data and the use of a computerized tracking system. Every week, supervisors met with interviewers to discuss their progress throughout the data gathering process. In these weekly meetings, supervisors assigned cases to interviewers, checked whether the appropriate person was selected to interview the participant in households, ensured that

interviews met quality standards, verified that participants were located, refusals were kept to a minimum, solved problems related to the interviewing processes, and kept a detailed account of the field work performed.

D. Data Management

All information collected, including documents, voice records and data that included identifying information (i.e. names, addresses, telephone numbers, and social security), was separated from the interview data and locked with securities codes, as soon as the data reached the office at the BSRI, Medical Sciences Campus. A thorough process of data cleaning was performed, which included the transfer of the completed interviews from interviewer's computers to our database server, review of interviews to identify cases that might need special care in the cleaning process (i.e. questions to be reverse coded, questions that participants struggled with and gave a variety of answers to, missing values that must be recoded, ID interviews miscoded, duplication of cases) and other issues regarding the algorithms of CIDI modules/programming interview.

E. Statistical Analyses

To take into account the multistage, multi-cluster design used in the survey sampling frame, all analyses were conducted using SUDAAN software 11.0.1. [42] Analyses were conducted on data weighted to correct for unequal probabilities of selection into the sample. In addition, a post-stratification weight was applied, which corrects for nonresponse and adjusts the sample to known population distributions on certain demographic variables (age and gender). Table 3 shows the unweighted and weighted gender and age distribution of the sample and compares the sample distribution with gender and age distribution derived from U.S Census Population for 2010. Statistical analysis consisted of univariate calculations (percentages, means and medians) and their confidence intervals.

Table 3. Distribution of the Sample by Gender and Age with 2010 U.S Census population for Puerto Rico			
	Survey Sample		
Gender and Age Groups	Unweighted n	Weighted n	Population %
Males			
18-35	339	212,174	19.6
36-50	435	469,510	43.2
51-64	517	404,543	37.2
Females			
18-35	386	210,869	17.7
36-50	529	509,291	42.6
51-64	856	474,109	39.7

The main findings of the study are presented in Section III. A total of twenty four (24) tables are grouped by the following topics: A) socio-demographics characteristics of the sample and population; B) estimates of last year prevalence rates of DSM-IV psychiatric disorders, not including substance use disorder; C) estimates of prevalence rates of Serious Mental Illness; D) use of specialty services in the last 12 months among adults with Serious Mental Illness; E) barriers to treatment among adults with SMI; F) co-occurring of substance use disorders among adults with SMI; G) estimates of last 12 months rates of DSM-IV substance use disorders; H) use of specialty services in the last 12 months for substance use disorders; I) barriers to treatment among adults with substance dependence disorders; and J) perceived need of services. Each group shows the 2010 Census population and percent estimates broken down by the entire Island, gender, and health region. Appendix A includes a description of the main variables included in the tables.

SECTION III: RESULTS

A. Sociodemographic Characteristics

Sociodemographic characteristics for the total population of 2,280,496 adults 18 to 64 years old in Puerto Rico are presented in **Table 4**. Demographic variables include: gender, age, educational level, marital status, household composition, monthly household income, employment status and health insurance. A distribution of the population by health region is also presented.

- Over half (52.4%) of the adult population 18 to 64 years in Puerto Rico are women.

- The mean age of the population is 40 years.

- The educational level of the adult population in this sample is markedly high, with the majority (55.2%) reporting some college or technical/vocational studies. Only 9.9% reported not having completed high school.

- Close to half (49.1%) are married or living in a marriage like relationship.

- Approximately 40% reported a monthly household income of less than $1,000 a month, while 25.2% reported a monthly household income of $1,999 or less. In total, 60% reported a monthly household income of less than $1,999 a month.

- Nearly half (49%) reported being employed in a part- or full-time job position.

- Thirteen percent of adults in Puerto Rico 18 to 64 years identified themselves as being unemployed.

- Nearly 40% (37.9%) reported being out of the labor force (this category includes able adults who are not actively looking for work, students, retired and disabled adults).

- The mean household composition is approximately three members per household.

- Close to 50% (46.0%) reported having a private medical plan, followed by 36.4% who reported having the Puerto Rico Health Reform health insurance.

Table 4: Sociodemographic Characteristics of Adults 18-64 years old in Puerto Rico (Sample Size= 3,062)

	Unweighted n[1]	Weighted N[2]	Weighted %	95% CI
Gender				
Female	1,771	1,194,269	52.4	49.7 to 55.0
Male	1,291	1,086,227	47.6	45.0 to 50.3
Age				
18-25	725	423,043	18.6	14.8 to 23.0
26-45	964	978,801	42.9	40.1 to 45.8
46-64	1,373	878,652	38.5	35.6 to 41.6
Educational Level				
Less than high school	309	223,854	9.9	8.2 to 11.8
Completed high school or GED	666	479,035	21.1	19.3 to 23.1
Some college or technical/vocational school	1,694	1,252,048	55.2	52.4 to 58.0
Graduate school/Some graduate studies	374	312,813	13.8	11.9 to 16.0
Marital Status				
Married/living with someone	1,409	1,118,268	49.1	45.6 to 52.7
Separated/Divorced	512	361,493	15.9	14.3 to 17.6
Widowed	75	42,515	1.9	1.5 to 2.4
Never married	1,058	753,346	33.1	29.2 to 37.2
Monthly Household Income				
Less than 1,000	1,099	758,406	34.8	31.2 to 38.6
$1,000 to $1,999	730	548,395	25.2	23.1 to 27.3
$2,000 to $2,999	475	380,125	17.4	15.6 to 19.4
$3,000 or more	597	491,931	22.6	20.0 to 25.4
Household Composition				
			2.6[*]	2.6 to 2.7
Employment Status				
Unemployed	415	298,161	13.1	11.3 to 15.1
Employed Full Time	936	797,829	35.0	32.3 to 37.9
Employed Part Time	423	317,799	14.0	12.5 to 15.5
Out of the labor force	1,281	862,336	37.9	34.8 to 41.0
Health Insurance**				
Uninsured	220	164,306	7.2	6.1 to 8.6
Private plan	1,390	1,043,727	46.0	42.8 to 49.4
Health reform	1,163	825,927	36.4	33.2 to 39.7
Other	20	13,929	0.6	0.4 to 1.0
Health Region				
San Juan	382	242,391	10.6	8.0 to 13.9
Metro-North	376	410,180	18.0	15.5 to 20.8
North	369	277,501	12.2	10.2 to 14.5
West	359	326,344	14.3	11.0 to 18.4
Southwest	398	187,822	8.2	6.6 to 10.3
Southeast	400	241,587	10.6	9.1 to 12.4
East	407	311,288	13.7	11.4 to 16.3
Northeast	371	283,383	12.4	10.4 to 14.8

[1.] *Number of people interviewed in the study*
[2.] *Number of people in Puerto Rico after weight adjustment.*
* *Represents the mean, ** More than one answer is possible*

B. Estimates of Last 12-Month Prevalence Rates of CIDI/DSM-IV Psychiatric Disorders

Psychiatric disorders (*excluding substance use disorders)* were clustered into three main categories: mood disorders (major depressive disorder, dysthymia and bipolar disorder), anxiety disorders (social phobia, agoraphobia, generalized anxiety disorder, and panic disorder) and developmental neuropsychiatric disorder (attention deficit disorder with hyperactivity).

Table 5: Last 12-Month Prevalence Rates of CIDI /DSM-IV Psychiatric Disorders among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	12-Month Prevalence Rates			
	Unweighted n	Weighted N	Weighted %	95% CI
Any Psychiatric Disorder *	**588**	**426,237**	**18.7**	17.0 to 20.5
Any Mood Disorder	**332**	**236,660**	**10.4**	9.2 to 11.7
Major Depressive Disorder	308	220,711	9.7	8.6 to 10.9
Bipolar Disorders[1]	103	73,690	3.2	2.6 to 4.0
Dysthymia	72	53,206	2.3	1.8 to 3.0
Any Anxiety Disorder	**401**	**286,146**	**12.5**	11.3 to 14.0
Generalized Anxiety Disorder	168	118,627	5.2	4.4 to 6.1
Social Phobia	195	142,585	6.3	5.3 to 7.3
Agoraphobia	151	106,069	4.7	3.9 to 5.5
Panic Disorder	78	56,614	2.5	1.9 to 3.3
Developmental Neuropsychiatric Disorder				
ADHD	**82**	**63,040**	**2.8**	2.1 to 3.6

*Category for Any Psychiatric Disorders represents any of the following disorders: mood disorders, anxiety disorders and/or developmental neuropsychiatric disorder.

1. Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.

Table 5 presents last 12-month prevalence rates of psychiatric disorders (according to CIDI/DSM-IV criteria) after the sample weights and post-stratification were applied.

- In Puerto Rico, approximately 2 in 10 adults aged 18 to 64 years old (18.7%) meet last year diagnostic criteria for a DSM-IV psychiatric disorder. When including substance use disorders (*excluding nicotine dependence*) in the rate of a psychiatric disorder the 12-month prevalence rates in Puerto Rico increases to 23.7% (*data not shown).*

- Anxiety disorders, which include generalized anxiety disorder, social phobia, agoraphobia and panic disorder, are the most common psychiatric disorders in Puerto Rico, affecting 12.5% of the population**.**

- Mood disorders (major depressive disorder, bipolar disorder, and dysthymia) are the second most common group of psychiatric disorders, reported by 10.4% of the adult population.

- Around 1 in 10 adults in the island (9.7%) meet criteria for a DSM-IV major depressive disorder during the last year.

- A total of 6.3% of the adult population in Puerto Rico meet a criteria for last year social phobia disorder and 5.2% meet criteria for generalized anxiety disorder.

- The lowest prevalence rates of psychiatric disorders among adults in Puerto Rico are panic disorder (2.5%), followed by dysthymia (2.3%).

Table 6: Last 12-Month Prevalence Rates of CIDI/DSM-IV Psychiatric Disorders by Gender among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

| | 12-Month Prevalence Rates | | | | | | | |
| | Male | | | | Female | | | |
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Psychiatric Disorder*	224	186,945	8.2	7.1 to 9.4	364	239,292	10.5	9.2 to 11.9
Any Mood Disorder	123	99,250	4.4	3.6 to 5.2	209	137,411	6.0	5.2 to 7.0
Major Depressive Disorder**	109	90,062	3.9	3.2 to 4.8	199	130,649	5.7	4.9 to 6.7
Bipolar Disorders[1]	49	37,315	1.6	1.2 to 2.2	54	36,375	1.6	1.2 to 2.2
Dysthymia**	23	18,619	0.8	0.5 to 1.3	49	34,587	1.5	1.1 to 2.2
Any Anxiety Disorder	143	116,974	5.1	4.3 to 6.1	258	169,172	7.4	6.4 to 8.6
Generalized Anxiety Disorder**	57	46,200	2.0	1.5 to 2.7	111	72,427	3.2	2.6 to 3.9
Social Phobia	74	63,110	2.8	2.2 to 3.5	121	79,475	3.5	2.7 to 4.4
Agoraphobia	58	45,512	2.0	1.5 to 2.6	93	60,557	2.7	2.1 to 3.3
Panic Disorder†	23	19,812	0.9	0.6 to 1.3	55	36,802	1.6	1.1 to 2.3
Developmental Neuropsychiatric Disorder								
ADHD**	45	39,454	1.7	1.2 to 2.4	37	23,586	1.0	0.7 to 1.5

* Category for Any Psychiatric Disorders represents any of the following disorders: mood disorders, anxiety disorders and/or developmental neuropsychiatric disorder. This category doesn't include substance use disorders.
** Significant at p ≤.0.5
† Tendency at p ≤.0.6

1. *Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.*

Table 6 and **Figure 1** present 12-month prevalence rates of psychiatric disorders (*excluding substance use disorders*) by gender.

- Overall, a total of 10.5% of women in Puerto Rico met last year diagnostic criteria for a psychiatric disorder, compared to 8.2% of the men.

- Women have higher prevalence rates for any anxiety disorder (7.4%) and mood disorder (6.0%).

Figure 1
Last 12-Months Prevalence Rates by Gender of CIDI/DSM-IV Psychiatric Disorders among Adults 18-64 years old in Puerto Rico

	Major Depressive Disorder	Bipolar Disorders	Dysthymia	Generalized Anxiety Disorder	Social Phobia	Agoraphobia	Panic Disorder	ADHD
Female	5.7%	1.6%	1.5%	3.2%	3.5%	2.7%	1.6%	1.0%
Male	3.9%	1.6%	0.8%	2.0%	2.8%	2.0%	0.9%	1.7%
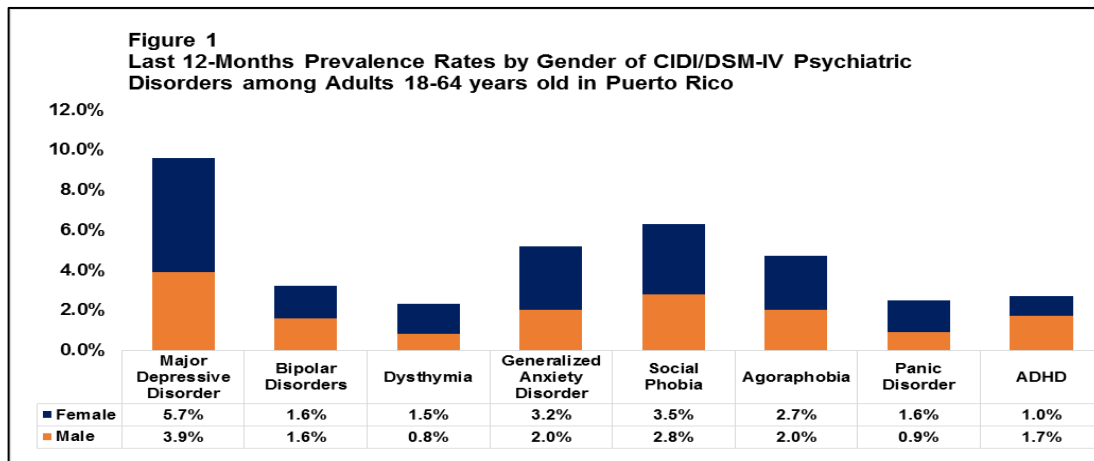
- Major depression affects 5.7% of Puerto Rican women and is 1.4 times more prevalent in women than men (*OR=1.4; IC=1.1-1.8*).

- Generalized anxiety disorder is significantly more prevalent in women (3.2%) than in men (2.0%), and women are 1.5 times more likely to meet criteria for generalized anxiety disorder (*OR=1.5; IC=1.0-2.1*).

- Prevalence rate of bipolar disorders were the same for men and women aged 18 to 64 years old (1.6%).

- Dysthymia (0.8%) and panic disorder (0.9%) are relatively uncommon disorders in the population, but more so among men in Puerto Rico. Women are nearly twice as likely to have dysthymia (*OR= 1.7; IC=1.0-2.9*). Data shows a tendency, though not significant (*p=.06*), for panic disorder to be twice as common in women *(OR=1.7; IC=1.0-3.0).*

Table 7: Last 12-Month Prevalence Rates of CIDI/ DSM-IV Psychiatric Disorder by Age among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	18-25				26-45				46-64			
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Psychiatric Disorder*	**114**	**64,097**	**2.8**	**2.0-3.9**	**172**	**16,7370**	**7.3**	**6.2-8.6**	**302**	**194,770**	**8.5**	**7.4-9.8**
Any Mood Disorder	*62*	*32,976*	*1.4*	*1.0-2.1*	*95*	*90,097*	*4.0*	*3.2-4.8*	*175*	*113,586*	*5.0*	*4.2-5.9*
Major Depressive Disorder	51	27,027	1.2	0.8-1.7	87	82,244	3.6	2.9-4.4	170	111,440	4.9	4.1-5.8
Bipolar Disorders[1]	23	11,727	0.5	0.3-0.8	30	29,355	1.3	0.9-1.8	50	32,608	1.4	1.0-2.0
Dysthymia	5	1,803	0.1	0.0-0.2	25	23,678	1.0	0.7-1.5	42	27,725	1.2	0.9-1.7
Any Anxiety Disorders	*72*	*39,375*	*1.7*	*1.3-2.3*	*114*	*109,762*	*4.8*	*3.9-5.9*	*215*	*137,009*	*6.0*	*5.1-7.0*
Generalized Anxiety Disorder	28	12,480	0.5	0.3-0.9	49	47,998	2.1	1.6-2.8	91	58,149	2.5	2.0-3.2
Social Phobia	42	23,868	1.0	0.7-1.5	58	56,962	2.5	1.9-3.3	95	61,755	2.7	2.1-3.4
Agoraphobia	13	7,648	0.3	0.2-0.7	37	34,698	1.5	1.1-2.2	101	63,724	2.8	2.2-3.5
Panic Disorder	9	5,838	0.3	0.1-0.5	24	21,881	1.0	0.6-1.5	45	28,894	1.3	0.9-1.7
Developmental Neuropsychiatric Disorder												
ADHD	17	10,485	0.5	0.2-1.0	25	24,191	1.1	0.7-1.6	40	28,363	1.2	0.8-1.8

*Category for Any Psychiatric Disorders represents any of the following disorders: mood disorders, anxiety disorders and/or developmental neuropsychiatric disorder.

1. Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.

Table 7 presents last 12-month prevalence rates of psychiatric disorders by age group among adults 18 to 64 years old.

- Puerto Rican adults between 46 to 64 years old showed the highest prevalence rates of any last year psychiatric disorder (8.5%), followed by the 26 to 45 age group (7.3%).

- Anxiety disorders are the most common disorders among all age groups, but specifically among adults between 46 to 64 years old (6.0%).

- Five in 100 adults in Puerto Rico between the age of 46 to 64 years old meet criteria for any mood disorder (5.0%). The second age group with the highest prevalence rate for any mood disorder correspond to the 26 to 45 age group (4.0%).

- Nearly five in 100 adults in Puerto Rico between the ages of 46 to 64 years old meet diagnostic criteria for a major depressive disorder (4.9%).

- Generalized anxiety disorder have similar prevalence rates in the age groups of 26 to 45 and 46 to 64 (2.1% vs. 2.5%).

- Dysthymia (0.1%), agoraphobia (0.3%) and panic disorder (0.3%) are relatively uncommon disorders among adults, but more so in the 18 to 25 years old group.

C. Estimates of Last 12-Month Prevalence Rates of Serious Mental Illness

Table 8: Prevalence Rates of Serious Mental Illness[1] among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	Unweighted n	Prevalence Rates of SMI		
		Weighted N	Weighted %	95% CI
Any Serious Mental Illness	**242**	**165,497**	**7.3**	**6.3 to 8.4**
Any Serious Mood Disorder	**139**	**97,290**	**4.3**	**3.6 to 5.1**
Major Depressive Disorder	130	92,127	4.1	3.4 to 4.9
Bipolar Disorders[2]	53	37,242	1.6	1.2 to 2.2
Dysthymia	41	30,421	1.3	1.0 to 1.8
Any Serious Anxiety Disorder	**195**	**133,732**	**5.9**	**5.0 to 6.9**
Generalized Anxiety Disorder	75	51,286	2.3	1.8 to 2.9
Social Phobia	116	82,006	3.6	3.0 to 4.4
Agoraphobia	103	70,534	3.1	2.5 to 3.8
Panic Disorder	39	28,062	1.2	0.9 to 1.8
Any Serious Developmental Neuropsychiatric Disorder				
ADHD	47	32,560	1.4	1.1 to 2.0

1. *Serious Mental Illness refers to meeting currently or at any time during the past year criteria for the DSM-IV disorder, and also meeting criteria for substantial impairment in functioning.*

2. *Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.*

Table 8 presents prevalence rates of Serious Mental Illness in Puerto Rico.

- Overall, 7.3% of the adults aged 18 to 64 years old in Puerto Rico meet last year criteria for a Serious Mental Illness (SMI). This percent represents an estimate of **165,497** adults who are considered in need of mental health services.

- In Puerto Rico, 5.9% of adults have a serious anxiety disorder (including generalized anxiety, phobias, and panic disorder).

- Within serious anxiety disorders, social phobia is the most prevalent disorder, with a total of 3.6% of adults meeting last year criteria.

- Approximately 5 in 100 adults in Puerto Rico (4.3%) met criteria for a serious mood disorder. Major depressive disorder is the most common condition, affecting 4.1% of the adult population.

Table 9: Prevalence Rates of Serious Mental Illness[1] by Gender among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	Prevalence Rates of SMI							
	Male				Female			
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Serious Mental Illness	91	71,118	3.1	2.5 to 4.0	151	94,379	4.2	3.5 to 5.0
Any Serious Mood Disorder	49	38,972	1.7	1.3 to 2.3	90	58,317	2.6	2.0 to 3.2
Major Depressive Disorder	44	36,139	1.6	1.2 to 2.2	86	55,988	2.5	1.9 to 3.1
Bipolar Disorder[2]	21	15,593	0.7	0.4 to 1.1	32	21,649	1.0	0.7 to 1.4
Dysthymia	14	12,070	0.5	0.3 to 0.9	27	18,350	0.8	0.6 to 1.2
Any Serious Anxiety Disorder	70	54,381	2.4	1.8 to 3.1	125	79,349	3.5	2.9 to 4.3
Generalized Anxiety Disorder	20	14,388	0.6	0.4 to 1.0	55	36,897	1.6	1.2 to 2.2
Social Phobia	44	36,858	1.6	1.2 to 2.2	72	45,147	2.0	1.5 to 2.6
Agoraphobia	43	33,052	1.5	1.0 to 2.0	60	37,482	1.7	1.3 to 2.1
Panic Disorder	13	12,113	0.5	0.3 to 0.9	26	15,949	0.7	0.4 to 1.1
Any Serious Developmental Neuropsychiatric Disorder								
ADHD	27	20,281	0.9	0.6 to 1.3	20	12,278	0.5	0.3 to 0.9

1. Serious Mental Illness refers to meeting currently or at any time during the past year criteria for the DSM-IV disorder, and also meeting criteria for substantial impairment in functioning.

2. Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.

Table 9 and **Figure 2** present prevalence rates for Serious Mental Illness by gender.

- When prevalence rates are segmented by gender, it is observed that women have slightly higher rates (4.2%) of SMI than men (3.1%).

- Puerto Rican women have higher rates of serious mood disorders (2.6%) and serious anxiety disorders (3.5%), except for serious ADHD, which is more prevalent among men (0.9%).

- Serious major depressive disorder (2.5% vs. 1.6%) and serious generalized anxiety disorder (1.6% vs 0.6%) have the highest differences in gender rates (See Figure 2). For the remaining disorders, the rates are similar.

**Figure 2
Prevalence Rates of Serious Mental Illness (SMI) by Gender among Adults 18-64 years old in Puerto Rico**

	Major Depressive Disorder	Bipolar Disorders	Dysthymia	Generalized Anxiety Disorder	Social Phobia	Agoraphobia	Panic Disorder	ADHD
■ Female	2.5%	1.0%	0.8%	1.6%	2.0%	1.7%	0.7%	0.5%
■ Male	1.6%	0.7%	0.5%	0.6%	1.6%	1.5%	0.5%	0.9%

37
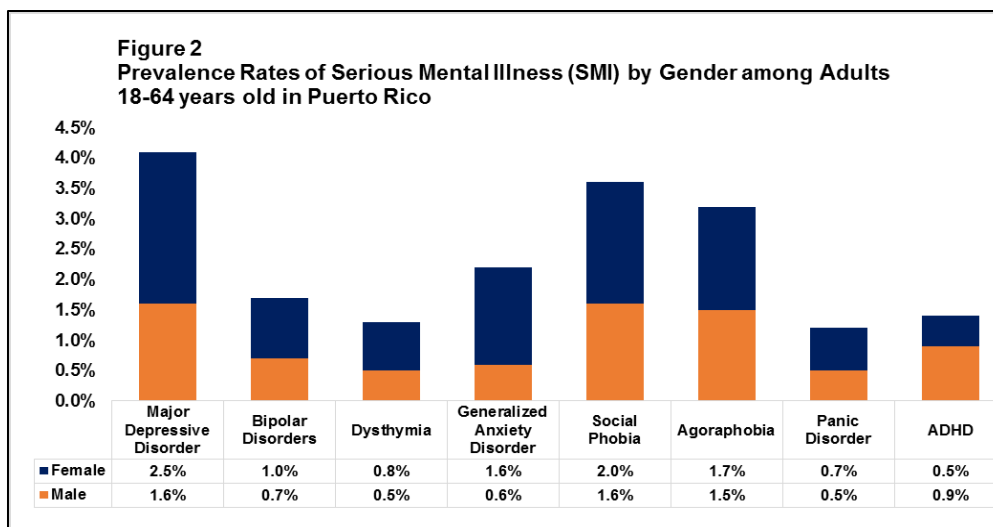
Table 10: Prevalence Rates of Serious Mental Illness[1] by Age among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)											
	18-25				26-45				46-64			
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Serious Mental Illness	34	17,598	0.8	0.5-1.3	54	49,401	2.2	1.7-2.8	154	98,498	4.3	3.6-5.2
Any Serious Mood Disorder	20	10,401	0.5	0.3-0.8	31	29,037	1.3	0.9-1.8	88	57,852	2.5	2.0-3.3
Major Depressive Disorder	16	8,070	0.4	0.2-0.7	30	28,052	1.2	0.9-1.7	84	56,005	2.5	1.9-3.2
Bipolar Disorder[2]	7	3,314	0.1	0.1-0.3	13	12,181	0.5	0.3-0.9	33	21,748	1.0	0.7-1.4
Dysthymia	2	726	0.0	0.0-0.1	11	10,514	0.5	0.3-0.8	28	19,180	0.8	0.6-1.3
Any Serious Anxiety Disorder	27	13,589	0.6	0.4-0.9	46	41,501	1.8	1.4-2.5	122	78,642	3.5	2.8-4.3
Generalized Anxiety Disorder	11	4,902	0.2	0.1-0.4	20	18,807	0.8	0.5-1.3	44	27,577	1.2	0.9-1.7
Social Phobia	18	9,395	0.4	0.2-0.7	32	29,670	1.3	0.9-1.9	66	42,942	1.9	1.4-2.5
Agoraphobia	4	2,550	0.1	0.0-0.4	21	18,790	0.8	0.5-1.3	78	49,195	2.2	1.7-2.8
Panic Disorder	3	1,662	0.1	0.0-0.2	9	8,315	0.4	0.2-0.8	27	18,085	0.8	0.5-1.2
Serious Developmental Neuropsychiatric Disorder												
ADHD	8	4,512	0.2	0.1-0.6	13	11,499	0.5	0.3-0.9	26	16,550	0.7	0.5-1.1

1. *Serious Mental Illness refers to meeting currently or at any time during the past year criteria for the DSM-IV disorder, and also meeting criteria for substantial impairment in functioning.*

2. *Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.*

Table 10 shows prevalence rates of serious mental illness by age**.**

- Adults between the ages of 46 and 64 years have higher rates of last year SMI compared with other age groups. Around four in 100 adults in Puerto Rico between 46 to 64 years old meet criteria for SMI (4.3%). Adults between 18 to 25 years old have lower rates of SMI (0.8%).

- Adults in Puerto Rico between 18 to 25 years old showed the lowest 12-month prevalence rate of SMI (0.8%).

- Nearly 3 out of 100 adults in Puerto Rico between 46 to 64 years old meet diagnostic criteria for a serious anxiety disorder (3.5%). The second age group with the highest prevalence rate of serious anxiety disorder is the 26 to 45 age group (1.8%).

- Serious mood disorders are more prevalent among adults between 46 to 64 years old (2.5%), followed by the 26 to 45 age group (1.8%).

- Dysthymia (0.0%), bipolar disorder (0.1%), agoraphobia (0.1%) and panic disorder (0.1%) have the lowest rates among the 18-25 age group.

Table 11: Prevalence Rates of Serious Mental Illness[1] by Health Region among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	San Juan N*=242,391		Metro-North N*=410,180		North N*=277,501		West N*=326,344	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Any Serious Mental Illness	8.4	5.7 to 12.1	6.9	4.6 to 10.1	10.5	7.4 to 14.6	4.2	2.2 to 7.8
Any Serious Mood Disorder	4.1	2.2 to 7.8	5.0	3.2 to 7.8	5.8	3.8 to 8.9	2.5	1.3 to 4.8
Major Depressive Disorder	3.6	1.7 to 7.5	5.0	3.2 to 7.8	5.1	3.2 to 8.0	2.3	1.2 to 4.2
Bipolar Disorders[2]	1.6	0.8 to 3.1	1.9	0.9 to 4.1	1.9	1.0 to 3.8	1.0	0.3 to 2.9
Dysthymia	0.7	0.2 to 2.4	1.5	0.6 to 3.5	2.0	1.0 to 4.0	0.3	0.0 to 2.2
Any Serious Anxiety Disorder	6.8	4.9 to 9.3	5.6	3.7 to 8.5	8.7	6.2 to 12.1	3.0	1.5 to 6.0
Generalized Anxiety Disorder	2.5	1.3 to 4.6	3.4	1.9 to 6.2	2.9	1.6 to 5.1	0.9	0.3 to 2.7
Social Phobia	3.8	2.4 to 6.0	2.8	1.3 to 5.0	5.0	3.2 to 7.7	2.3	0.9 to 5.5
Agoraphobia	2.9	1.6 to 5.5	2.6	1.5 to 4.7	5.2	3.2 to 8.5	0.9	0.3 to 3.1
Panic Disorder	1.1	0.4 to 2.7	1.1	0.4 to 3.1	2.0	1.0 to 4.0	0.5	0.1 to 1.6
Serious Neuropsychiatric Developmental Disorder								
ADHD	2.6	1.6 to 4.1	0.2	0.0 to 1.7	2.1	1.0 to 4.6	1.5	0.5 to 4.2

	Southwest N*=187,822		Southeast N*=241,587		East N*=311,288		Northeast N*=283,383	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Any Serious Mental Illness	3.6	1.5 to 8.1	8.1	5.8 to 11.1	9.9	7.5 to 12.9	6.4	4.2 to 9.6
Any Serious Mood Disorder	2.2	0.9 to 5.4	5.3	3.6 to 7.9	4.8	3.3 to 7.0	3.8	2.2 to 6.3
Major Depressive Disorder	2.0	0.7 to 5.2	5.3	3.6 to 7.9	4.8	3.3 to 7.0	3.6	2.1 to 5.9
Bipolar Disorders[2]	0.7	0.2 to 2.7	2.3	1.2 to 4.3	2.0	1.0 to 4.0	1.3	0.6 to 2.8
Dysthymia	0.4	0.1 to 1.8	2.2	1.1 to 4.4	1.8	0.9 to 3.4	1.7	0.8 to 3.6
Any Serious Anxiety Disorder	3.3	1.3 to 7.9	6.1	4.0 to 9.2	8.8	6.5 to 11.9	4.4	2.7 to 7.2
Generalized Anxiety Disorder	0.9	0.3 to 2.4	4.1	2.5 to 6.6	1.9	1.0 to 3.7	1.1	0.5 to 2.5
Social Phobia	2.2	0.6 to 8.1	4.1	2.6 to 6.5	5.9	4.1 to 8.3	3.1	1.7 to 5.5
Agoraphobia	2.1	0.8 to 5.2	3.3	1.9 to 5.6	6.0	4.2 to 8.3	1.8	0.9 to 3.4
Panic Disorder	0.5	0.1 to 2.0	1.4	0.7 to 3.1	2.6	1.2 to 5.5	0.5	0.1 to 3.6
Serious Neuropsychiatric Developmental Disorder								
ADHD	0.3	0.0 to 1.9	2.0	1.0 to 3.9	1.6	0.7 to 3.9	1.5	0.7 to 3.1

[1.] Serious Mental Illness refers to meeting currently or at any time during the past year criteria for DSM-IV disorder, and also meeting criteria for substantial impairment in functioning.

[2.] Bipolar disorder includes bipolar I and II. According to DSM-IV bipolar I diagnosis is used when there has been at least one manic episode in an individual's life. The bipolar II is used when there has been a more regular occurrence of depressive episodes along with hypomanic episodes, but no full blown manic episodes.

* Represent the number of people in the Health Region after weighted adjustments.

Table 11 and **Figure 3** present prevalence rates of Serious Mental Illness by health region.

- The highest prevalence rates for SMI are observed among residents in the North (10.5%), East (9.9%) and San Juan (8.4%) regions.

- Residents living in the East health region have higher rates of serious anxiety disorders (8.8%), followed by residents in the North region (8.7%).

- For any serious mood disorder, residents in the North health region reported higher rates (5.8%) followed by the Southeast (5.3%), North (5.1%), and Metro-North (5.0%) health regions.

- Serious generalized anxiety is most commonly observed among adults who live in the Southeast (4.1%), Metro-North (3.4%), North (2.9%) and San Juan (2.5%) regions. The other regions have a prevalence rate below 2.0%.

Figure 3
Prevalences Rates of Any Severe Mental Illness (SMI) by Health Regions among Adults 18-64 years old in Puerto Rico

	San Juan	Metro-North	North	West	Southwest	Southeast	East	Northeast
Any SMI	8.4%	6.9%	10.5%	4.2%	3.6%	8.1%	9.9%	6.4%
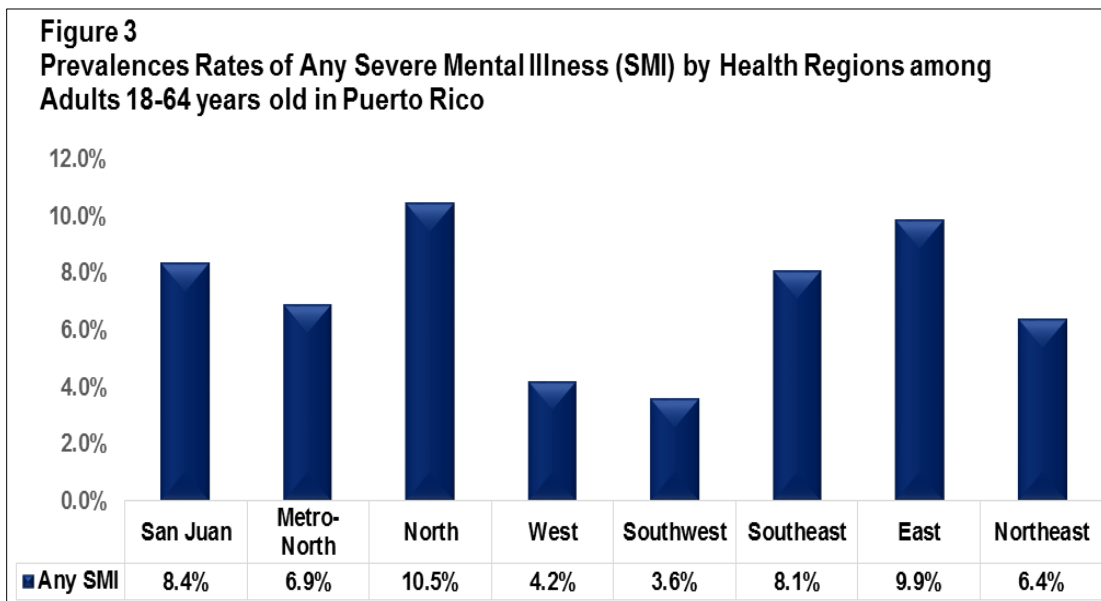
D. Estimates of Specialty Service Use among Adults with Serious Mental Illness

An estimated **7.3%** of the adult population in Puerto Rico are <u>in need</u> of mental services since they meet criteria for SMI. Use of specialty services refers to the percent of the population that met criteria for SMI and also used any type of the following services in the last 12 months: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.

Table 12: Use of Specialty Services[1] among Adults 18-64 years old in Puerto Rico that meet criteria for a Serious Mental Illness (Sample Size=3,062)

	Use of Services			No Use of Services		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Total	149	63.9	57.0 to 70.3	93	36.1	29.7 to 43.0

1. *Refers to the percent of the population that meet criteria for Serious Mental Illness and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.*

Table 12 presents use of specialty services among adults in Puerto Rico who are in need for mental health.

- More than half (63.9%) of adults in Puerto Rico who met criteria for a serious mental illness (SMI) received specialized services in the last 12 months. Conversely, over a third of adults (36.1%) who met criteria for a SMI had not received specialized treatment services during the same period.

Table 13: Use of Specialty Services[1] by Gender among Adults 18-64 years old in Puerto Rico that meet criteria for a Serious Mental Illness (Sample Size=3,062)

	Use of Services			No Use of Services		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Male	54	26.4	21.1 to 32.4	37	16.6	11.9 to 22.7
Female	95	37.5	30.9 to 44.7	56	19.5	14.8 to 25.2

1. Refers to the percent of the population that meet criteria for Serious Mental Illness and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.

Table 13 presents use of services by segmented by gender among adults in Puerto Rico who meet criteria for a last year SMI.

- Among adults in need for mental health services, women have higher rates of service use (37.5%) compared with men (26.4%). Only 19.5% of women and 16.6% of men who meet criteria for SMI did not receive specialty care in the last 12 months preceding the interview.

Table 14: Use of Specialty Services[1] by Age among Adults 18-64 years old in Puerto Rico that meet criteria for a Serious Mental Illness (Sample Size=3,062)

	Unweighted n	Use of Services Weighted %	95% CI
18-25	13	4.3	2.2 to 8.2
26-45	35	19.7	14.4 to 26.4
46-64	101	39.9	33.4 to 46.8

1. Refers to the percent of the population that meet criteria for Serious Mental Illness and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.

Table 14 presents use of specialty services among the total population with SMI by group age.

- The 46 to 64 age group shows the highest percentage of individuals who meet criteria for a SMI and received any specialized treatment. Approximately 4 in 10 adults between the ages of 46 to 64 years (39.9%) received treatment in the last 12 months. On the contrary, the 18 to 25 age group shows the lowest rate of adults with SMI and received treatment (4.3%).

Table 15: Use of Specialty Services[1] by Health Region among Adults 18-64 years old in Puerto Rico that meet criteria for a Serious Mental Illness (Sample Size=3,062)

	Use of Services		
	Unweighted n	Weighted %	95% CI
San Juan	21	50.2	33.8 to 66.6
Metro-North	22	73.7	56.0 to 86.0
North	30	73.6	57.3 to 85.3
West	7	53.5	30.0 to 75.6
Southwest	8	56.6	37.0 to 74.4
Southeast	19	59.5	40.9 to 75.8
East	30	72.4	57.8 to 83.4
Northeast	12	49.4	27.2 to 71.9

1. *Refers to the percent of the population that meet criteria for Serious Mental Illness and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.*

Table 15 and **Figure 4** present detailed rates of service use among residents with a SMI by health region.

- In three health regions, Metro-North (73.7%), North (73.6%) and East (72.4%), around 7 out of 10 of their residents reported specialized service use in the last 12 months. The lowest rate of specialized service use was reported among residents from the Northeast region (49.4%).

Figure 4:
Use of Specialty Services by Health Region among Adults 18-64 years old in Puerto Rico that meet criteria for a Serious Mental Illness
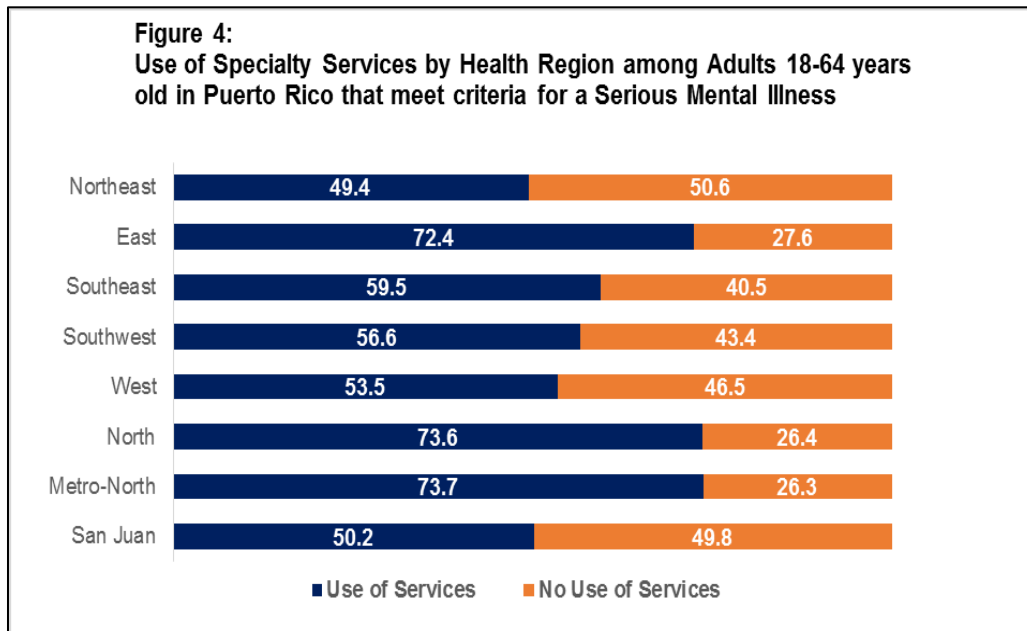
E. Barriers to Treatment among Adults with Serious Mental Illness and who Perceived Need of Services

Table 16: Barriers to Treatment among Adults 18-64 years old who meet Criteria for Serious Mental Illness (Sample Size=3,062)	Unweighted n	Weighted N	Weighted %	95% IC
Problem would get better by itself	17	11,199	63.0	40.5 to 81.0
Wanted to handle the problem by itself	17	10,865	61.2	40.1 to 78.7
Thought it would take too much time or be inconvenient	13	9,888	55.7	33.8 to 75.6
Treatment wouldn't work	11	7,501	42.2	24.7 to 62.0
Concerned about treatment cost	10	7,242	40.8	24.0 to 60.1
Scared of being put in a hospital	11	7,197	40.5	23.4 to 60.3
Unsure where to go or who to see	11	6,823	38.4	21.9 to 58.1

*Respondents could select more than one barrier

Table 16 shows a summary of all the reported barriers for seeking treatment among adults with unmet need of services for a SMI, along with the percentage who perceived need of services in the preceding 12 months.

- The most frequently cited barrier among adults who meet criteria for a SMI was that they thought the problem would get better on its own (63.0%). The second most common barrier was that the respondents wanted to handle their problems on their own (61.2%). More than a half (55.7%) of respondents who met criteria for a SMI reported that they thought treatment would take too much time or be inconvenient.

F. Co-occurring of Serious Mental Disorders with Substance Use Disorders

Table 16a. Co-Occurring of Substance Use Disorder in the Last 12-Months among Adults 18-64 years old that meet Criteria of Serious Mental Illness (Sample Size=3,062)			
	Unweighted n	Weighted N	Weighted %	95% CI
Any Substance Use Disorder	41	25,732	15.5	11.8 to 20.3
Alcohol Abuse	20	13,396	8.1	5.2 to 12.3
Alcohol Dependence	9	6,884	4.2	2.2 to 7.8
Alcohol Abuse or Dependence	**20**	**13,396**	**8.1**	**5.2 to 12.3**
Drug Abuse	25	15,716	9.5	6.5 to 13.8
Drug Dependence	14	7,968	4.8	2.7 to 8.4
Drug Abuse or Dependence	**29**	**17,459**	**10.5**	**7.3 to 15.0**

Table 16a presents adults with serious mental illness (SMI) and past year substance use disorder.

- An estimated of 25,732 adults 18 to 64 years old (15.5%) had serious mental illness and a co-occurring substance use disorder.

- Eight in 100 adults (8.1%) had serious mental illness and a co-occurring alcohol use disorder during the last 12-months.

- A total of 4.2% adults who met criteria for a SMI also met criteria for an alcohol dependence disorder.

- Around 1 in 10 adults (10.5%) who met criteria for last year SMI, also met criteria for drug use disorder in the same period.

- A total of 4.8% adults who met criteria for a SMI also met criteria for a drug dependence disorder.

G. Estimates of Last 12-Month Prevalence Rates of Substance Use Disorders

Table 17: Last 12-Month Prevalence Rates of CIDI/DSM-IV Substance Use Disorders among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)				
	12-Month Prevalence Rates			
	Unweighted n	**Weighted N**	**Weighted %**	**95% CI**
Any Substance Use Disorder	**352**	**262,472**	**11.5**	**10.1 to 13.1**
Nicotine Dependence	**155**	**116,649**	**5.1**	**4.2 to 6.2**
Alcohol Abuse	155	118,806	5.2	4.2 to 6.4
Alcohol Dependence	40	33,512	1.5	1.0 to 2.1
Alcohol Abuse or Dependence	**168**	**130,275**	**5.7**	**4.7 to 6.9**
Drug Abuse	99	68,186	3.0	2.3 to 3.9
Drug Dependence	38	27,045	1.2	0.8 to 1.7
Drug Abuse or Dependence	**109**	**74,647**	**3.3**	**2.5 to 4.2**
Any Substance Dependence Disorder	**74**	**57,301**	**2.5**	**1.9 to 3.3**

Table 17 presents the 12-month prevalence rates of CIDI/DSM-IV substance use disorders among adults 18-64 years old in Puerto Rico. Prevalence rates for substance use disorders included nicotine, alcohol, and drugs. The term "drug" is used to refer to illicit drugs as well as prescription drugs used without the recommendation or prescription of a health professional, and used in greater amounts than recommended by the health professional, or used for any reason other than what a health professional indicated it should be used for.

- About 1 in 10 adults in Puerto Rico (11.5%) meet criteria for last 12-month substance use disorder.

- Alcohol abuse is the most common substance use disorder among adults in Puerto Rico. Five in 100 adults in Puerto Rico (5.2%) meet criteria for last 12-month alcohol abuse disorder and 1.5% meet criteria for alcohol dependence. In total, approximately 6 in 100 adults (5.7%) meet criteria for a last 12-month alcohol abuse/dependence disorder (referred as any alcohol use disorder).

- The second highest prevalence rate of last 12-month substance use disorders is observed for nicotine dependence disorder (5.1%).

- Only 3% of adults in Puerto Rico meet criteria for a last 12-month drug abuse disorder and 1.2% for drug dependence. In total, about 3 in 100 adults (3.3%) meet criteria for a last 12-month drug abuse/dependence disorder.

- An estimated 2.5% of the adult population in Puerto Rico are in need of substance use services since they meet criteria for last year substance dependence disorder. This represents a total of **57,301** adults in Puerto Rico.

Table 18: Last 12-Month Prevalence Rates of CIDI/DSM-IV Substance Use Disorders by Gender among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	12-Month Prevalence Rates							
	Male				Female			
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Substance Use Disorder	**218**	**178,524**	**7.8**	6.6 to 9.2	**134**	**83,948**	**3.7**	3.1 to 4.1
*Nicotine Dependence***	94	76,682	3.4	2.7 to 4.2	61	39,967	1.8	1.3 to 2.3
Alcohol Abuse**	109	87,491	3.8	3.0 to 4.9	46	31,315	1.4	1.0 to 1.9
Alcohol Dependence**	27	23,467	1.0	0.7 to 1.6	13	10,045	0.5	0.2 to 0.8
Alcohol Abuse or Dependence	117	95,925	4.2	3.3 to 5.3	51	34,350	1.5	1.1 to 2.0
Drug Abuse**	58	44,200	1.9	1.4 to 2.7	41	23,986	1.1	0.7 to 1.5
Drug Dependence†	23	17,481	0.8	0.5 to 1.2	15	9,565	0.4	0.2 to 0.7
Drug Abuse or Dependence	63	47,478	2.1	1.5 to 2.8	46	27,170	1.2	0.8 to 1.7

*** Significant at p≤.05*
† Tendency

Table 18 and **Figure 5** present prevalence rates of substance use disorders by gender.

- In Puerto Rico, prevalence rates of substance use disorders in men are more than double the rates in women for any substance use disorder. A total of 4.2% men in Puerto Rico are affected by any alcohol use disorder, compared with 1.5% of women. The prevalence for nicotine disorder is 3.4% compared to 1.8% in women. The rates for any drug use disorder is 2.1% for men and 1.2% for women

- A statistically significant difference in prevalence rates by gender is observed for: nicotine dependence, alcohol abuse, alcohol dependence and drug abuse (*p value ≤0.05*). Women have a lower probability of being diagnosed with an alcohol abuse disorder *(OR=0.3; IC=0.2-0.5)*, alcohol dependence *(OR=0.4; IC=0.2-0.9)*, drug abuse disorder *(OR=0.5; IC-0.3-0.8)* and nicotine dependence disorder *(OR=0.5; IC=0.3-0.7)*.

Figure 5: Last 12-Month Prevalence Rates of Substance Use Disorder by Gender among Aults 18-64 years old in Puerto Rico

	Nicotine Dependence	Alcohol Abuse/Dependence	Drug Abuse/Dependence
Female	1.8%	1.5%	1.2%
Male	3.4%	4.2%	2.1%

- Data shows a tendency, though not significant (*p=.06*), for drug dependence to be less common in women *(OR=0.5; IC=0.2-1.0)*.

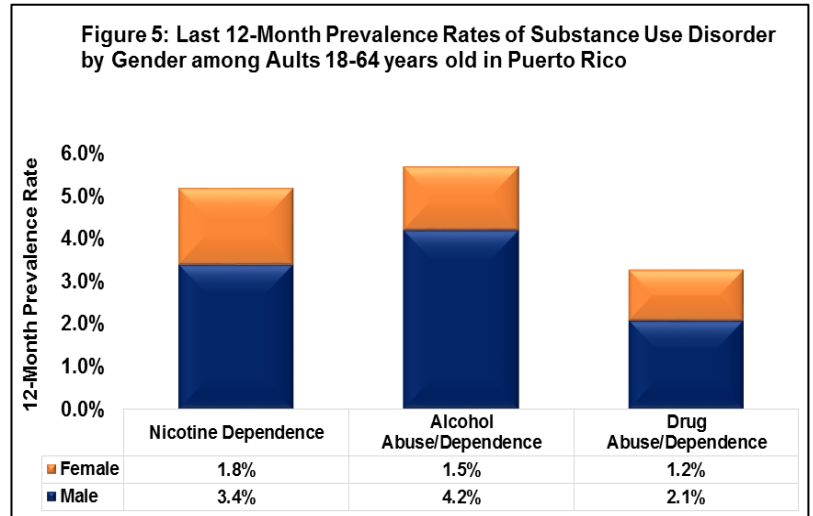| Table 19: Last 12-Month Prevalence Rates of CIDI/DSM-IV Substance Use Disorders by Age among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)											
	18-25				26-45				46-64			
	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI	Unweighted n	Weighted N	Weighted %	95% CI
Any Substance Use Disorder	129	76,088	3.3	2.5 to 4.4	118	116,285	5.1	4.2 TO 6.2	105	70,099	3.4	2.5 to 3.8
Nicotine Dependence	40	23,821	1.0	0.7 to 1.6	54	55,546	2.4	1.8 to 3.3	61	37,281	1.6	1.3 to 2.1
Alcohol Abuse	82	50,517	2.2	1.6 to 3.1	46	45,879	2.0	1.5 to 2.7	27	22,410	1.0	0.6 to 1.5
Alcohol Dependence	15	10,204	0.4	0.2 to 0.9	15	15,423	0.7	0.4 to 1.1	10	7,885	0.3	0.2 to 0.6
Alcohol Abuse or Dependence	85	52,539	2.3	1.6 to 3.2	54	53,752	2.4	1.8 to 3.1	29	23,985	1.1	0.7 to 1.6
Drug Abuse	46	26,702	1.2	0.8 to 1.8	34	30,400	1.3	0.9 to 1.9	19	11,083	0.5	0.3 to 0.8
Drug Dependence	12	6,697	0.3	0.2 to 0.5	16	14,885	0.7	0.4 to 1.1	10	5,463	0.2	0.1 to 0.5
Drug Abuse or Dependence	47	27,373	1.2	0.8 to 1.8	39	34,712	1.5	1.1 to 2.2	23	12,561	0.6	0.3 to 0.9

Table 19 shows prevalence rates of substance use disorders by age group.

- Among the adult population of Puerto Rico, the 26 to 45 age group showed the highest last year prevalence rates for any substance use disorder (5.1%), specifically for nicotine dependence (2.4%), any alcohol use disorder (2.4%), and any drug use disorder (1.5%).

- The 18 to 25 age group showed only a slightly higher prevalence rate for alcohol abuse (2.2%), when compared with the others groups.

Table 20: Last 12-Month Prevalence Rates of CIDI/DSM-IV Substance Use Disorders by Health Region among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	San Juan N*=242,391		Metro-North N*=410,180		North N*=277,501		West N*=326,344	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Any Substance Use Disorder	21.7	17.0 to 28.0	8.8	6.1 to 12.6	12.4	9.1 to 16.8	11.6	7.3 to 18.1
Nicotine Dependence	10.9	7.3 to 15.9	3.6	2.0 to 6.4	5.5	3.0 to 9.9	4.0	2.2 to 7.2
Alcohol Abuse	8.2	5.2 to 12.8	4.0	2.0 to 8.1	5.2	3.4 to 7.9	7.9	4.5 to 13.4
Alcohol Dependence	2.5	1.0 to 5.7	1.2	0.4 to 3.2	2.3	1.2 to 4.3	2.7	1.2 to 5.8
Alcohol Abuse or Dependence	8.9	6.0 to 13.1	4.6	2.4 to 8.5	6.0	4.0 to 8.9	8.8	5.1 to 14.9
Drug Abuse**	7.2	4.3 to 11.8	1.5	0.5 to 4.0	3.0	1.6 to 5.7	2.9	1.3 to 6.4
Drug Dependence	1.8	0.9 to 3.7	1.0	0.4 to 2.5	1.2	0.4 to 3.2	1.0	0.4 to 2.6
Drug Abuse or Dependence	7.8	4.9 to 12.3	1.6	0.6 to 4.3	3.2	1.8 to 5.8	2.9	1.3 to 6.4

Cont. Table 20: Last 12-Month Prevalence Rates of CIDI/DSM-IV Substance Use Disorders by Health Region among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

	Southwest N*=187,822		Southeast N*=241,587		East N*=311,288		Northeast N*=283,383	
	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI	Weighted %	95% CI
Any Substance Use Disorder	8.1	5.3 to 12.2	14.8	10.7 to 20.1	9.6	7.2 to 12.8	7.2	5.0 to 10.2
Nicotine Dependence	4.0	2.2 to 7.3	6.0	3.5 to 10.0	5.5	3.9 to 7.7	2.8	1.6 to 5.0
Alcohol Abuse	2.6	1.2 to 5.5	5.6	3.3 to 9.2	4.9	3.0 to 7.9	2.9	1.7 to 5.1
Alcohol Dependence	0.7	0.2 to 2.5	0.6	0.1 to 2.5	1.3	0.4 to 4.0	0.3	0.0 to 2.0
Alcohol Abuse or Dependence	3.3	1.7 to 6.5	5.9	3.7 to 9.5	4.9	3.0 to 7.9	2.9	1.7 to 5.1
Drug Abuse	2.9	1.4 to 5.7	5.1	3.1 to 8.3	1.5	0.6 to 3.6	1.6	0.7 to 3.9
Drug Dependence	1.1	1.4 to 3.2	1.9	0.8 to 4.8	0.3	0.0 to 2.2	1.6	0.6 to 3.9
Drug Abuse or Dependence	2.9	1.4 to 5.7	6.2	3.7 to 10.4	1.5	1.6 to 3.6	2.0	0.7 to 5.0

* Represent number of people after weight adjustments.

Table 20 presents 12-month prevalence rates for substance use disorder by Health Region.

- There is a significant variability in the rates of substance use disorder by health region, ranging from 21.7% in San Juan to 7.2% in the Northeastern region. The second health region with highest prevalence rates for any substance use disorder is the Southeast (14.8%), followed by the North (12.4%) and West (11.6%) regions.

- Residents from the San Juan health region have the highest 12 month prevalence rate of alcohol use disorder (8.9%), alcohol abuse (8.2%), and alcohol dependence (2.5%). The second highest prevalence rates for specific alcohol use disorders are observed in the West region: alcohol use disorder (8.8%), alcohol abuse (7.9%), and alcohol dependence (2.7%). The Northeast region has the lowest prevalence rate of alcohol use disorder (2.9%).

- In terms of drug disorders, the San Juan region has the highest rate for last year drug use disorder (7.8%).The second highest rate for drug use disorder is the Southeast region (6.2%). The East region hast the lowest rate for drug use disorder in the last 12 months corresponding to 1.5%, followed by the Metro-North region (1.6%).

- The East region hast the lowest rate for drug use disorder in the last 12 months corresponding to 1.5%, followed by the Metro-North region (1.6%).

Table 21: Substance Use in the Last 12-Months by Gender among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)
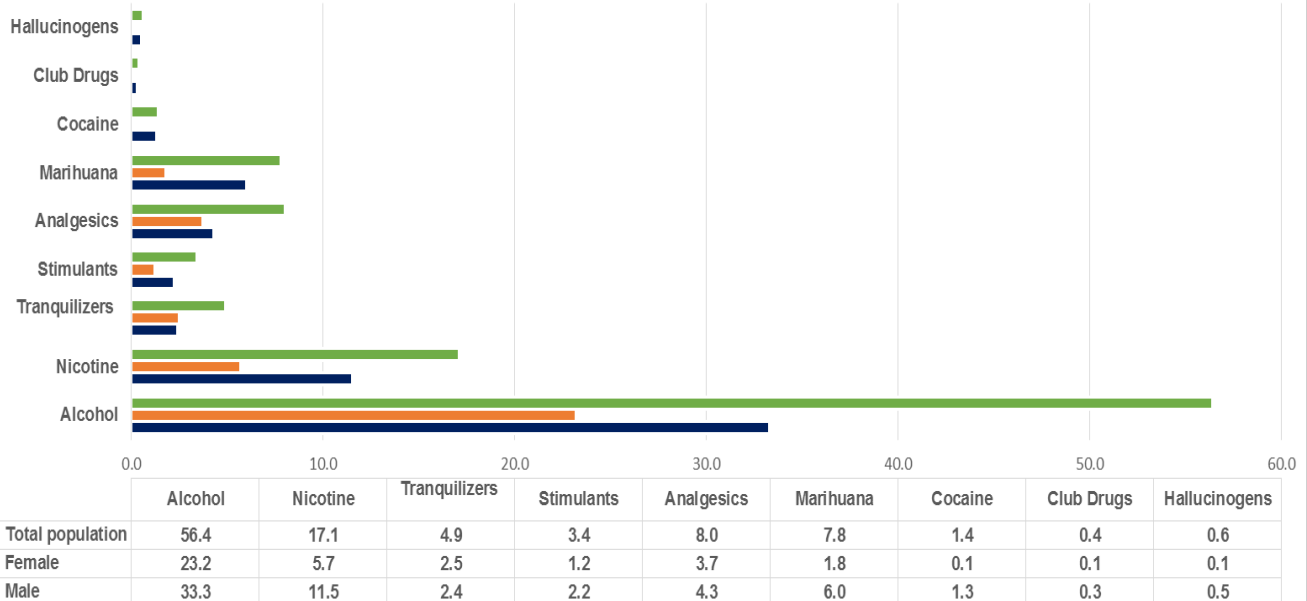
12-Months Use of:	Male			Female			Total Population		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Alcohol	906	33.3	30.9 to 35.8	770	23.2	21.3 to 25.1	1,676	56.5	53.3 to 59.5
Nicotine	317	11.5	10.1 to 13.1	189	5.7	4.8 to 6.7	506	17.2	15.4 to 19.1
Any Illicit Drug Use [1]	298	10.3	9.0 to 11.9	275	7.4	6.5 to 8.5	573	17.8	16.0 to 19.7
Tranquilizers	65	2.4	1.8 to 3.0	89	2.5	2.0 to 3.2	154	4.9	4.1 to 5.8
Stimulants	63	2.2	7.7 to 3.0	45	1.2	0.9 to 1.6	108	3.4	2.7 to 4.4
Analgesics	128	4.3	3.6 to 5.3	139	3.7	3.0 to 4.5	267	8.0	6.9 to 9.3
Marihuana	171	6.0	4.9 to 7.3	71	1.8	1.3 to 2.5	242	7.8	6.5 to 9.5
Cocaine	38	1.3	0.9 to 1.9	5	0.1	0.0 to 0.3	43	1.4	1.0 to 2.0
Club Drugs	10	0.3	0.1 to 0.6	6	0.1	0.1 to 0.3	16	0.4	0.2 to 0.9
Hallucinogens	16	0.5	0.3 to 0.9	5	0.1	0.0 to 0.2	21	0.6	0.3 to 1.0
Heroine	2	0.1	0.0 to 0.3	0	0.0	-	2	0.1	0.0 to 0.3
Inhalants	3	0.1	0.0 to 0.3	0	0.0	-	3	0.1	0.0 to 0.3
Other drugs	3	0.1	0.0 to 0.2	1	0.0	0.0 to 0.1	4	0.1	0.0 to 0.2

[1] Include controlled medications (used without the recommendation of a health professional, or used in greater amounts than the health professional recommendations, or used for any reason other than what a health professional said it should use them for) and illicit drugs such as marihuana, cocaine, club drugs, hallucinogens, heroin, inhalants and other drugs.

Table 21 and Figure 6 present rates of last 12-month substance use by the total population of Puerto Rico and by gender.

- In Puerto Rico, the highest drug consumed is alcohol with about 6 out of 10 adults (56.6%) consuming alcohol in the last 12 months preceding the interview.

- The second highest prevalent drug used is nicotine with a last year prevalence rate of 17.2%.
- Of the illegal drugs, analgesics without prescription are most frequently used (8.0%) followed by marihuana (7.8%) and tranquilizers (4.9%).

- Men have double the rates of nicotine use (11.5%) than women (5.7%). Also, men used more controlled medications such as stimulants (2.2%), and analgesics (4.3%).

- Men have three times the rate of marihuana use (6.0%) than women (1.8%).

- Women did not report use of heroin and inhalants in the last 12 months prior to the interview.

Figure 6: Substance Use in the Last 12-Months by Gender among Adults 18-64 years old in Puerto Rico

	Alcohol	Nicotine	Tranquilizers	Stimulants	Analgesics	Marihuana	Cocaine	Club Drugs	Hallucinogens
Total population	56.4	17.1	4.9	3.4	8.0	7.8	1.4	0.4	0.6
Female	23.2	5.7	2.5	1.2	3.7	1.8	0.1	0.1	0.1
Male	33.3	11.5	2.4	2.2	4.3	6.0	1.3	0.3	0.5

Note: The use of heroin, inhalants and other drugs is not included because their prevalence rate was less than 0.1%.

Table 22: Substance Use in the Last 12-Months by Age among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

12-Months Use of:	18-25			26-45			46-64		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Alcohol	**489**	**12.2**	9.6 to 15.5	**598**	**26.7**	24.4 to 29.2	**589**	**17.5**	15.6 to 19.5
Nicotine	**98**	**2.6**	1.9 to 3.4	**214**	**9.2**	7.9 to 10.6	**194**	**5.4**	4.6 to 6.4
Any Illicit Drug Use[1]	**192**	**5.0**	3.8 to 6.5	**171**	**7.2**	6.1 to 8.5	**210**	**5.6**	4.7 to 6.6
Tranquilizers	21	0.5	0.3 to 0.8	49	2.0	1.5 to 2.7	84	2.3	1.8 to 3.0
Stimulants	49	1.4	0.9 to 2.1	27	1.2	0.8 to 1.7	32	0.9	0.6 to 1.4
Analgesics	54	1.3	0.9 to 1.8	86	3.4	2.7 to 4.2	127	3.3	2.7 to 4.1
Marihuana	142	3.8	2.8 to 5.1	80	3.5	2.7 to 4.5	20	0.6	0.4 to 1.0
Cocaine	12	0.3	0.2 to 0.5	19	0.8	0.5 to 1.2	12	0.3	0.2 to 0.7
Club Drugs	15	0.4	0.2 to 0.8	1	0.0	0.0 to 0.2	0	0.0	-
Hallucinogens	16	0.4	0.2 to 0.7	5	0.2	0.1 to 0.5	0	0.0	-
Heroine	0	0.0	-	2	0.1	0.0 to 0.3	0	0.0	-
Inhalants	1	0.0	0.0 to 0.1	1	0.0	0.0 to 0.4	1	0.0	0.0 to 0.2
Other drugs	3	0.0	0.0 to 0.1	1	0.0	0.0 to 0.2	0	0.0	-

1. Include controlled medications (used without the recommendation of a health professional, or used in greater amounts than the health professional recommendations, or used for any reason other than what a health professional said it should use them for) and illicit drugs such as marihuana, cocaine, club drugs, hallucinogens, heroin, inhalants and other drugs.

Table 22 and Figure 7 present rates of substance use in the last 12 months by age group.

- Among the Puerto Rican adult population, the 26 to 45 age group showed the highest rate of alcohol (26.7%) and nicotine use (9.2%). On the other hand, the 18 to 25 age group reported higher rates of marihuana (3.8%), club drugs (0.4%) and hallucinogens use (0.4%) when compared with the other age groups.

- The 46 to 64 year old group reported higher use of tranquilizers (2.3%).

Figure 7: Substance Use in the Last 12-Months by Age among Adults 18-64 years old in Puerto Rico

	Alcohol	Nicotine	Tranquilizers	Stimulants	Analgesics	Marihuana	Cocaine	Club Drugs	Hallucinogens
46-64	17.5	5.4	2.3	0.9	3.3	0.6	0.3	0.0	0.0
26-45	26.7	9.2	2.0	1.2	3.4	3.5	0.8	0.0	0.2
18-25	12.2	2.6	0.5	1.4	1.3	3.8	0.3	0.4	0.4

Note: The use of heroin, inhalants and other drugs is not included because their prevalence rate was less than 0.1%.
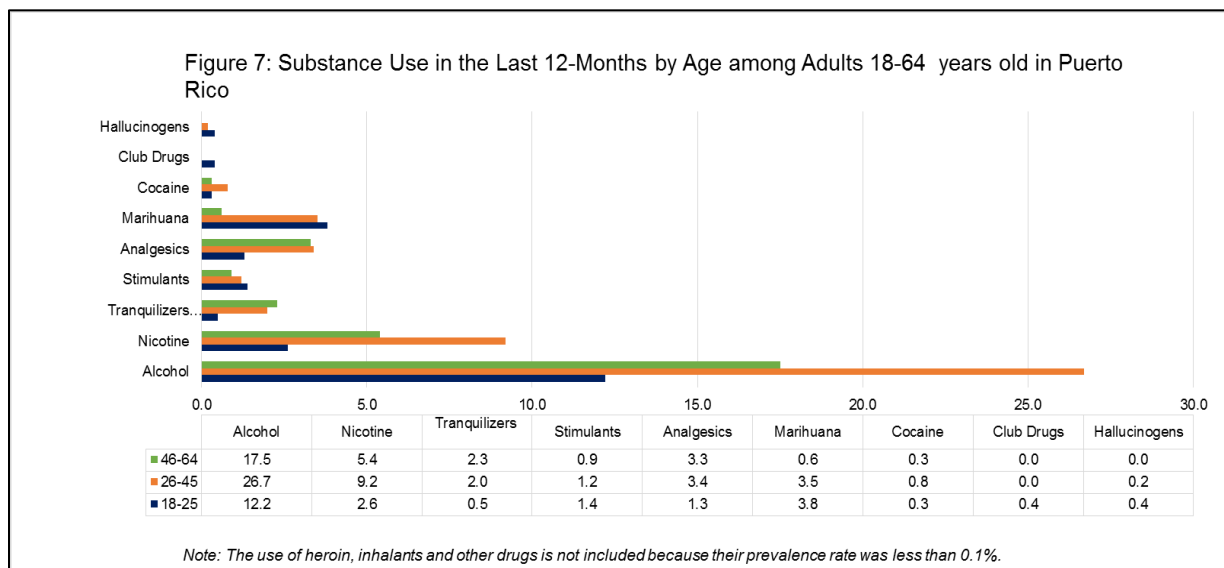
Table 23: Substance Use in the Last 12-Months by Health Region among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

12-Months Use of:	San Juan N*=242,391 Weighted %	95% CI	Metro-North N*=410,180 Weighted %	95% CI	North N*=277,501 Weighted %	95% CI	West N*=326,344 Weighted %	95% CI
Alcohol	72.8	63.0 to 80.8	50.5	44.7 to 56.3	48.9	42.4 to 55.5	63.8	46.2 to 78.3
Nicotine	34.1	26.2 to 43.0	13.0	9.7 to 17.2	16.4	11.5 to 22.7	12.5	8.5 to 18.2
Any Illicit Drug Use[1]	2.8	2.0 to 4.1	2.5	1.8 to 3.4	1.9	1.5 to 2.5	3.1	2.1 to 4.6
Tranquilizers	6.5	4.2 to 9.8	4.0	2.3 to 6.7	5.3	3.5 to 7.9	4.7	2.8 to 7.9
Stimulants	6.8	3.9 to 11.8	2.7	1.4 to 5.4	1.8	0.8 to 4.1	6.4	3.7 to 10.9
Analgesics	8.7	6.5 to 11.7	4.7	2.8 to 7.9	8.3	5.9 to 11.3	6.3	3.5 to 11.1
Marihuana	18.0	12.7 to 24.8	6.4	3.9 to 10.4	5.9	3.2 to 10.7	12.3	7.3 to 19.8
Cocaine	5.1	3.2 to 7.9	0.5	0.1 to 3.5	1.4	0.5 to 3.6	0.7	0.3 to 2.1
Club Drugs	1.0	0.3 to 3.7	0.0	-	0.4	0.1 to 2.4	1.5	0.4 to 4.8
Hallucinogens	2.0	0.7 to 5.4	0.0	-	0.4	0.1 to 2.4	1.5	0.5 to 4.1
Heroine	0.3	0.1 to 2.3	0.0	-	0.0	-	0.0	-
Inhalants	0.1	0.0 to 1.0	0.0	-	0.4	0.1 to 2.9	0.0	-
Other drugs	0.4	0.1 to 1.9	0.0	-	0.0	-	0.0	-

Cont. Table 23: Substance Use in the Last 12-Months by Health Region among Adults 18-64 years old in Puerto Rico (Sample Size=3,062)

12-Months Use of:	Southwest N*=187,822 Weighted %	95% CI	Southeast N*=241,587 Weighted %	95% CI	East N*=311,288 Weighted %	95% CI	Northeast N*=283,383 Weighted %	95% CI
Alcohol	61.4	56.2 to 66.4	65.5	60.7 to 70.1	50.2	45.2 to 55.2	45.8	40.6 to 51.1
Nicotine	19.5	15.3 to 24.4	15.7	11.7 to 20.8	15.9	12.1 to 20.7	15.8	11.6 to 21.2
Any Illicit Drug Use[1]	1.4	1.0 to 1.9	2.4	1.9 to 3.1	1.8	1.4 to 2.3	1.8	1.3 to 2.4
Tranquilizers	4.3	2.5 to 7.3	5.6	3.5 to 8.7	5.2	3.3 to 8.0	4.0	2.5 to 6.5
Stimulants	1.7	0.7 to 3.9	4.3	2.5 to 7.2	1.3	0.5 to 3.1	2.4	1.2 to 4.7
Analgesics	8.6	5.5 to 13.1	15.9	12.1 to 20.5	6.4	3.8 to 10.8	8.7	5.9 to 12.6
Marihuana	6.0	3.9 to 9.2	6.2	3.7 to 10.2	4.5	2.6 to 7.8	4.2	2.3 to 7.5
Cocaine	1.2	0.4 to 3.4	1.5	0.5 to 5.0	0.7	0.2 to 2.8	1.1	0.3 to 3.4
Club Drugs	0.3	0.0 to 2.3	0.2	0.0 to 1.2	0.0	-	0.0	-
Hallucinogens	0.3	0.0 to 2.3	0.2	0.0 to 1.2	0.0	-	0.4	0.1 to 2.9
Heroine	0.0	-	0.0	-	0.0	-	0.4	0.1 to 2.8
Inhalants	0.0	-	0.3	0.0 to 2.0	0.0	-	0.0	-
Other drugs	0.0	-	0.3	0.1 to 1.3	0.0	-	0.0	-

1. *Include controlled medications (used without the recommendation of a health professional, or used in greater amounts than the health professional recommendations, or used for any reason other than what a health professional said it should use them for) and illicit drugs such as marihuana, cocaine, club drugs, hallucinogens, heroin, inhalants and other drugs.*

. *Represents the total population in the region after weight adjustments*

Table 23 presents rates of substance use among the adult population of Puerto Rico by health region.

- Residents in the San Juan health region have the highest last year rate of all substances; including alcohol, nicotine, and illegal drug use. About 7 in 10 of residents (72.8%) living in San Juan used alcohol in the last 12 months, 34.1% used nicotine products and 18% used marihuana during the same period. San Juan also reported the highest rates of controlled medication use, tranquilizers (6.5%), stimulants (6.8%), and analgesics (8.7%), when compared with other health regions.

- The Northeast region reported the lowest rates of alcohol use (45.8%), while the west region reported the lowest rates of nicotine use (12.5%).

H. Estimates of Use of Specialty Services among Adults with Substance Use Disorder

Use of specialty services refers to the percent of the population that meet criteria for any substance use disorder in the last 12 months and used any specialty services at any point in those 12 months. Although the Federal Register does not include individuals with substance abuse as in need of services we added this group in this section as they are at risk of becoming dependent.

Table 24: Use of Specialty Services[1] among Adults 18-64 years old in Puerto Rico that meet criteria for Last 12-Months Substance Use Disorder (Sample Size=3,062)

	Use of Services			No Use of Services		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Alcohol Dependence	13	30.2	18.7 to 44.9	27	69.8	55.1 to 81.3
Drug Dependence	17	43.6	27.2 to 61.5	21	56.4	38.5 to 72.8
Any Substance Dependence Disorder[2]	**26**	**32.6**	**22.3 to 44.8**	**48**	**67.4**	**55.2 to 77.7**
Alcohol Abuse	27	17.0	11.8 to 23.9	128	83.0	76.1 to 88.2
Drug Abuse	32	33.4	24.2 to 44.1	67	66.6	55.9 to 75.8

1. Refers to the percent of the population that meet criteria for last year substance dependence and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment.

2. This category includes only: alcohol dependence and drug dependence disorders.

Table 24 presents the met and unmet need for services among adults who met criteria for substance dependence in the last 12 months.

- The majority of adults who met criteria for last year alcohol dependence did not receive specialized services during the 12 months preceding the interview (69.8%). Only 30.2% received specialty substance use treatment during that time period.

- Slightly higher rates of use of specialty treatment were reported among adults with drug dependence in the last 12 months (43.6%). However the vast majority of adults with drug dependence did not receive any treatment (56.4%). Thus, the majority of adults with substance dependence did not receive specialty treatment.

- Approximately 7 out of 10 adults (67.4%) who are in need for substance services (since meet criteria for a last year substance dependence disorder) did not receive any treatment during the same period.

- Overall, 17.0% of those who met criteria for alcohol abuse disorder in the last 12 months used specialty services, while 33.4% of those who met criteria for drug abuse disorder used specialty services.

Table 25: Use of Specialty Services[1] by Gender among Adults 18-64 years old in Puerto Rico that meet criteria for Last 12-Months Substance Use Disorder (Sample Size=3,062)

	Use of Services			No Use of Services		
	Unweighted n	Weighted %	95% CI	Unweighted n	Weighted %	95% CI
Alcohol Dependence						
Male	7	17.1	8.7 to 30.8	20	52.9	37.2 to 68.1
Female	6	13.1	6.1 to 26.1	7	16.8	7.6 to 33.3
Drug Dependence						
Male	10	27.0	14.3 to 45.1	13	37.6	21.8 to 56.6
Female	7	16.6	7.2 to 33.8	8	18.8	8.8 to 35.6
Any Substance Dependence Disorder						
Male	14	18.8	10.9 to 30.4	33	48.7	35.9 to 61.7
Female	12	13.9	7.5 to 23.9	15	18.7	10.7 to 30.5
Alcohol Abuse						
Male	16	10.9	6.9 to 16.7	93	62.8	54.2 to 70.6
Female	11	6.1	3.3 to 11.2	35	20.2	14.6 to 27.3
Drug Abuse						
Male	18	19.8	13.0 to 28.8	40	45.1	35.4 to 55.1
Female	14	13.7	8.0 to 22.4	27	21.5	14.5 to 30.7

1. Refers to the percent of the population that meet criteria for last year substance dependence and use any specialty service in the last 12 months of the interview. Specialty services included: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night) and partial hospitalization, residential program, detoxification program and methadone/buprenorphine treatment

Table 25 presents rates use of specialty services by gender among adults who met criteria for substance dependence in the last 12 months.

- Males with alcohol dependence disorder have the largest percent (52.9%) of individuals who did not received any specialty services in the last 12 months previous de interview.

- A total of 37.6% of men who meet criteria for a drug dependence disorder did not receive specialty services in the last 12 months. Men with last year drug dependence disorder double the rates of unmet needs when compared with women who are affected with the same disorder (18.8%).

- Among adults who met criteria for alcohol abuse in the last 12 months, only 6.1% of women used specialty services in the last 12 months compared to men (10.9%).

- In addition, men with drug abuse disorder reported higher rates (19.8%) of service use in the last 12 months compared with women (13.7%).

- Due to a low sample size which limits statistical power, utilization of specialty services among adults with substance use disorders is not presented by age and health region.

I. Barriers to Treatment among Adults with Substance Dependence Disorder and who Perceived Need of Services

Table 26: Barriers to Treatment among Adults 18-64 years and meet Last 12-Months CIDI/DSM-IV Substance Dependence Disorder (Sample Size=3,062)

	Unweighted n	Weighted N	Weighted %	95% IC
Problem would get better by itself	8	5,218	78.9	38.8 to 95.7
Wanted to handle the problem by itself	8	4,787	72.4	34.1 to 93.0
Treatment wouldn't work	7	4,740	71.7	35.4 to 92.1
Concerned about treatment cost	5	4,259	64.4	32.9 to 87.0
No comfortable discussing problems with a health professional	6	3,508	53.0	22.5 to 81.4

*Respondents could select more than one barrier

Table 26 shows a summary of the five most reported barriers for seeking treatment among adults with perceived unmet need of services for substance dependence.

- Over 7 out of 10 adults with substance dependence and perceived unmet need for treatment identified three common held beliefs that represented major barriers: problem would get better o itself (78.9%), wanted to handle their problems on their own (72.4%) and the belief that treatment would not work (71.7%). Over a half of respondents (53.0%) mentioned as a barrier for not seeking treatment that they felt uncomfortable discussing their health problem with a health professional.

J. Estimates of Perceived Need of Services

Perceived need for services was only asked to those individuals who reported not using any specialty treatment services in the last 12 months. We did not quantify how many participants in the study, who were already receiving substance abuse treatment, also perceived needing treatment services. This is a limitation, particularly for those who meet criteria for substance dependence, given the commonly seen trend in which a large percentage of individuals with drug dependence seek specialized substance use treatment only if referred by the court and as a result may not perceive a need for services.

Table 27: Perceived Need of Services[1] by Gender among Adults 18-64 years old in Puerto Rico that meet Criteria of Serious Mental Illness and/or Last 12-Month Substance Dependence (Sample Size=3,062)

		Perceived Need of Services		
	Unweighted n	Weighted N	Weighted %	95% IC
Male	13	10,610	19.8	12.0 to 30.8
Female	20	12,492	23.3	15.0 to 34.4
Total	**33**	**23,102**	**43.1**	**31.8 to 55.2**

1. *Refers to the percent of the population that meet criteria for Serious Mental Illness and/or substance dependence, did not use any specialty service in the last 12 months of the interview and perceived that they needed help to address their disorder.*

Table 27 presents perceived need of services by gender among adults who meet criteria for a SMI and or substance dependence disorder and did not received any service during the last 12 months.

- Nearly half of the adults in Puerto Rico (43.1%) with a serious mental illness and/or substance dependence AND who did not received any services perceived need for services in the last 12 months.

SECTION IV: DISCUSSION

Results of this study show that for the most part, last year prevalence rates of psychiatric disorders (including substance use disorders) increased over a period of 30 years from 16% to 23.7% (*data not shown*). This rate is comparable to the overall rate of last year psychiatric disorders documented in the latest psychiatric epidemiology study of the US which reported a 26.2% rate (including substance use disorders). [21] The similarity in results between both studies is consonant with what we had expected given that our previous results of three decades ago showed that in spite of the fact that the island suffered very high rates of poverty, unemployment, low education levels and poverty, the rates of disorder corresponded with those reported in a similar study carried out in three communities of the United States. [18] It seems that history repeats itself, and that even now, when all indicators of the island point towards a challenging scenario comprised of financial problems, high migration and unemployment, the rates of psychiatric disorders do not seem to be different from those of one of the nation in the world with the strongest demographic indicators of stability and prosperity. As in the past, we attribute this finding to the social and family support systems that are prevalent in the island which help mitigate the effects of social instability and serve as protective factors against psychiatric disorders. [43] It is also possible, that given the chronicity of all these indicators of social instability and disruption, the Puerto Rican population has developed other long term coping mechanisms besides family and social support to deal with adversity.

The rates of last year alcohol abuse/dependence (5.7%), alcohol abuse (5.2%) and alcohol dependence (1.5%) have not changed substantially from those reported by Colón et al in 1998 [28] (4.1%), (3.1%) (1.0%) respectively, or from those reported in the first study [18] done thirty years ago for alcohol abuse/dependence in Puerto Rico (4.9%). This would seem to be surprising given that there is evidence that indicators of social instability such as high rates of chronic

unemployment, are associated with binge drinking and increases in alcohol consumption. [44,45] However, recent data from our team of investigators found no relationship between unemployment, which is one indicator of social instability, and the current reported volume of alcohol consumption or any other expected outcome of alcohol consumption, including meeting criteria for a DSM 5 alcohol use disorder. [46] We believe that the same protective factors that we mentioned above, regarding other psychiatric disorders, are related to the lack of increase over time in alcohol use disorders.

The rates of last year illicit drug abuse (3.0%) and drug dependence (1.2%) and any drug abuse/dependence (3.3%) have increased as compared to 0.8% and 0.5% and 1.3% respectively reported by Colón et al in their 1998 survey [28]. The rates obtained in this study are also higher than those reported by Kessler, Chiu et al, 2005 as part of the National Comorbidity Study Revised (NCS-R), in which the rate for last year drug abuse was found to be 1.4% and of drug dependence was 0.4%. In both studies, the NCS-R and this study, the same instrument (CIDI) and psychiatric nosology (DSM–IV) were used. The reasons for this higher prevalence of drug abuse/dependence in the island as compared to the US is not known and is surprising given that in the past the contrary was found. [47] However, it is important to note that the NCS-R was carried out from 2001-2003, whereas this study was carried out ten years later (2014-2016). It is known that prevalence rates of drug abuse/dependence, have increased with time in the US. [48-49]

In this report, and as previously stated, need for mental health services is defined based on the definition stated by the Federal Register (1993) which in short, requires that the person meet criteria for a serious mental illness (SMI) in the preceding 12 months, which requires having both a mental disorder and substantial functioning impairment. Results of this study show that 7.3% of the adult population of Puerto Rico (18 to 64 years) met criteria for a SMI. This rate is not that different from the rate reported for Puerto Rico in the 2011 report of the Centers for Disease

Control [50] (6%) in which serious psychological distress was measured with the a score of 13 or more in the K-6. The CDC found Puerto Rico's rate of serious psychological distress to be the third highest rate when compared to all US States. Mississippi had the highest rate of serious psychological distress (6.6%) and Kentucky the second highest rate (6.5%). Direct comparisons with the States and this study are difficult to make because of differences in the methodology used between this study and those of the States. In spite of this, our rate of SMI is not that different from that reported in other States of the US.

The study found significant disparity in the in the prevalence rates of SMI across the eight Health Regions in which the island wide probability sample was stratified. The North (10.5%) and East regions (9.9%) followed by San Juan (8.4%) reported the highest rates of SMI, while the Southwest had the lowest rate (3.6%). It is reasonable to expect that metropolitan areas like San Juan, the North region and their proximities would have the highest rates of SMI since mental disorders are traditionally higher in inner cities. However, it is unclear why the Southwest region would have such a low rate of SMI in contrast to the other Health Regions.

Overall, independent of the rate of SMI by region, the pattern of mental health specialty services utilization was high, with 63.9% of the population with a SMI receiving specialty services. The Metro-North and North regions had the highest use of mental health specialty sector services among the population with SMI (73.7%), closely followed by the East (72.4%) region. The North region had the highest rates of SMI as compared to all other regions, so it is not surprising that this region also had the highest rate of mental health services utilization. However, San Juan had the third highest rate of SMI and yet the second lowest rate of mental health utilization (50.2%) with only about half of the population in need receiving services. It is not clear why in San Juan half of the population in need is not receiving specialty services considering accessibility to the same is usually higher in urban areas. This needs to be examined further. But

it is encouraging to note that more than half of the population in need of specialized services are using these services. Data from other studies carried out in the US have shown lower rates of utilization of specialized mental health services among Latinos compared to other racial groups. (51-52)

Although we do not have recent data with which to compare the utilization rate of mental health services by the SMI, the current results represent a dramatic increase in the utilization of specialty services by the adult population in need of said services during the last 25 years. The latest study that examined this issue by Alegría [25] in 1991 found that only 17.9% of the population in need was using specialty mental health services. In this study, as previously stated, need for services did not include meeting criteria for a psychiatric disorder, but was defined as high or moderate symptoms and significant impairment in functioning. Although the dramatic differences between the utilization rate found in this study (63.9%) compared to the previous one (17.9%) could be influenced by differences in the definition of need for services, we believe that the central driver for the rise in utilization rates has been significant improvements in accessibility to mental health services among the population with a serious mental disorder during the past 25 years. Another factor that could be influencing the higher utilization rates is a lessening of the social stigma associated with mental health illnesses, especially as they pertain to receiving treatment for them. Public service media campaigns and other government efforts may have also played a role as they have increased awareness of the various treatments options available in the island. Nonetheless, there is certainly the need to investigate this finding in future studies to pinpoint the exact causes of this rise in the utilization rate of mental health services.

The study defined the need for specialty substance use treatment as those persons who meet criteria for any substance dependence disorder in the preceding 12 months of the interview. Overall, a low percent of the population (1.5%) in the island met criteria for alcohol dependence

in the preceding 12 months compared to the 6.7% percent of the US population aged 18 or older who met criteria for heavy alcohol use as found in the Results from 2014 National Survey on Drug Use and Health.[48]

Contrary to the markedly high utilization rates for mental health treatment (63.9%), the use of specialty services was significantly lower by persons who met criteria for alcohol abuse (17.0%) and alcohol dependence (30.2%) and therefore were in need of services. As can be seen, the large majority of the population in need of treatment for alcohol abuse and dependence was not receiving specialty treatment. Alarmingly, the most at risk age group for alcohol abuse, between 18-25 years of age, had the lowest utilization rates of specialty services at only 14.5%.

A typically found characteristic of those seeking treatment for alcohol use disorder is that they use most often services in the informal sector. Individuals with alcohol dependence commonly seek treatment by attending Alcoholic Anonymous (AA) groups. However, only 22.9% in the study sample with alcohol dependence reported going to groups of Alcoholic Anonymous (*data not shown*). The low rate of attendance to AA groups may be due to the gate question asked to the respondent. This question inquired whether the respondent had used a self -help program but did not specify what was meant by a self- help program. It is possible that some people who attended AA groups did not think of this program as a self-help one and consequently responded negatively to the gate question. The low utilization rate of substance use treatment in the specialty sector and in self- help groups by persons with alcohol dependence needs to be addressed by MHAASA given that this population has alarmingly high rates of unmet need.

The study found that the utilization rates for specialty services by individuals who met criteria for drug abuse (33.4%) and drug dependence disorder (43.6%) were higher than the utilization rates for alcohol abuse (17.0%) and alcohol dependence specialty services (30.2%). This may be due

to the fact that many individuals who meet criteria for drug abuse/dependence also commit crimes and are more likely to be in contact with the criminal justice system. Depending on the severity of the crime, prosecuted individuals are often given the option by the courts of either prison or drug abuse treatment, logically they usually choose the treatment route.

Once we segmented the data of our representative sample by gender, we found that overall males have higher rates of unmet need of services for psychiatric and substance use disorders than females. The difference in prevalence rates of no use of services was similar for Serious Mental Illness, 19.5% for females to 16.6% for males. However, the gap became much more pronounced when looking at the rates of use of services for substance abuse and dependence disorders. For alcohol abuse disorder, only 6.1% of females used specialty services compared to 10.9% of females. When looking at alcohol dependence disorder, the utilization rates of specialty services were higher, 17.1% for males and 13.1% for females. This trend continued when evaluating the use of specialty services for drug abuse disorder where we found that 19.8% of males used them compared to 13.7% of females. Again the utilization rates for drug dependency disorder were generally higher than for drug abuse disorder, yet males continued to make less use of specialty services, 27.0% for males compared to 16.6% for females.

Gender plays such a significant role in the rates of mental and substance use disorders that the WHO has declared "gender roles are a critical determinant of mental health". [53] Epidemiological studies have consistently found a nearly 2 to 1 rate of depression, dysthymia, generalized anxiety, and panic disorders in females, while males have markedly higher rates of antisocial and substance use disorders. [54-55] Gender has been found to also shape the patterns of seeking treatment for psychiatric and substance use disorders. Studies have reported that females are more likely to seek mental health care from a primary health care physician, while males are more apt to seek specialty mental health treatment. [56-58] SAMHSA's TEDS Report found that in 2011 twice as many males (1.23 million) as females (609,000) were admitted to substance use

treatment in the US. [59] Other studies have found that females were more likely to face multiple barriers to accessing treatment than males and as a result less likely to use specialty services for substance use treatment, instead seeking care in primary care or alternatively in mental health care settings. [60] The findings of our study run contrary to what has typically been reported, given that our data showed that females utilized specialty services for substance use treatment at a higher rate than males. Our findings also conflict with those of a prior study of adults in Puerto Rico which also found that males were more likely to use specialty services for substance use disorders. [61] That study, however, was constrained to only the inhabitants of poor areas in Puerto Rico in contrast to ours which utilized an island-wide representative sample. The reasons why gender disparities for the utilization rates of specialty services for psychiatric and substance use disorders in Puerto Rico are reversed when compared to the US are outside the scope of this study. Nonetheless, the data consistently suggests that gender does indeed play a role in modulating the use of specialty treatments for both psychiatric and substance Use Disorders. MHAASA should seek to uncover what are the gender specific barriers impacting the use of mental health and substance use specialty services to develop a more refined understanding of the factors impacting prevention and treatment efforts.

Overall, the low rates of utilization of the specialty sector by individuals with alcohol/drug use and dependence is unsurprising given that substance users usually do not seek treatment for their dependency. [62-64] In fact, the 2013 National Survey on Drug Use and Health found that only 7.9% of participants with alcohol use disorder in the previous 12 months had received treatment. [65] Nonetheless, there remains a sizable gap between the utilization rates for alcohol abuse and dependence treatment when contrasted with the utilization rates found for mental health services which needs to be addressed in future studies.

One of the factors covered by our survey was the barriers to receiving mental health or substance abuse care. There was, however, a limitation in our questionnaire. As previously described in the methods section, the barriers to care questionnaire was fully asked only to persons who had responded that they perceived a personal need for services while also meeting criteria for SMI or substance dependence, yet had not received any specialty sector services. For those who met criteria for SMI but did not perceive need, they were asked about the four most commonly found barriers to care reported by relevant studies in the literature; (did not think would help, the problem would get better by itself, they could solve the problem by themselves, treatment would not work or take too much time). [66-67] Only 25 people in the study sample perceived a need for services and in addition met criteria for SMI, yet had not received any services. Thus, the number of people who answered in full the questionnaire is thus too small to disaggregate by health region. However, for the total sample, the most common barriers to care cited among those who perceived need for services and who met criteria for SMI or substance dependence and did not receive services were: "the problem would get better by itself" (63%), they "wanted to handle the problem on their own" (61.2%), that they thought "it would take too much time or be inconvenient" (55.7%), and they felt "treatment would not work" (42.2%). The high prevalence of these barriers reported by those with perceived unmet need for treatment, clearly represents an important area for study by MHAASA which might yield insights on how to improve utilization rates by the population in need.

Studies have consistently documented comorbidity between SMI and SUD [68-69] to the extent that people with any mental illness are over three times more likely to also report substance use and/or abuse. [70] They have overwhelmingly identified strong associations between specific mental illnesses like anxiety and independent mood disorders [71], major depression [72-73], bipolar disorder [74], post-traumatic stress disorder [75], schizophrenia [76], and ADHD [77] and substance use disorders. The high rate of unmet need for treatment of alcohol and drug abuse in contrast

with the surprisingly low rate of unmet need for treatment of SMI found in this assessment, suggests that ASSMCA can close the gap of unmet need between the two disorders by prioritizing the training of primary mental health care providers to correctly assess when mental health patients have comorbidity of SUDs and refer them to the appropriate specialist provider when needed. This is a widespread challenge as health care systems are mostly configured to treat individual conditions as opposed to comorbid disorders. [78] Consequently, clinical guidelines often do not consider comorbidity in their recommendations or help service providers prioritize treatment options. [79] As a result, treatment tends to focus on only the most salient disorder, or when more than one disorder is being treated, it is done by various uncoordinated providers using disease specific guidelines only, without considering the impact of the combined drug burden. [80-81] A holistic approach that includes accurate diagnosis and treatment of comorbid SMIs and SUDs accompanied by structured longitudinal care has the potential to significantly improve the treatment outcomes of the adult population of Puerto Rico in need of specialized mental health and substance treatment.

In summary, the results of this need assessment study showed that, as in the past, the overall rates of mental disorders are not that different from the most recent rates published for the North American population and for the Latino population in the U.S. [21-23] It appears that, in spite of all the social and financial instability that Puerto Rico has suffered in recent years, the risk for psychiatric disorders has not increased more than in the US. This counterintuitive finding is possibly due to the high levels of family and social support existent in the Puerto Rican culture that can serve to mitigate the risk of psychiatric disorders in the population. Furthermore, it also appears that the rates of SMI have not changed significantly from those published by the Federal Register in the past years (6% to 8%). What appears to be a significant improvement is the rate of mental health utilization in the specialty sector by persons who meet criteria for SMI. More than half of this population (69%) received specialty treatment in the 12 months preceding the

interview. Unfortunately, the same cannot be said of the population who meet the criteria for substance abuse and dependence and are in need of specialty substance use treatment. From 30% to 43% respectively of this population sought services in the 12 months previous to the interview. A small percent of the alcohol dependence population (22%) reported attending AA groups. Furthermore, there were three health regions in which none of the respondents who met criteria for alcohol dependence had received treatment.

There is a clear need for MHAASA to develop strategies to increase the use of specialized services by those who meet criteria for a substance dependence disorder. Improving accessibility to substance use treatment as well as investigating the modifiable factors that may be impinging on the low use of services, are critical. It is well known in the literature of this field that the most common barriers to seeking help by both the persons in need of mental and substance use treatment are not being able to recognize the need for services, the belief that the problem will solve on its own and the belief that treatment will not help. [66-67] The survey also found these to be the most common barriers to care. Nonetheless, addressing these commonly found attitudes is only part of the challenges compounding this complex issue. More emphasis must be placed on making mental health and substance use treatment more accessible. There is also a need to examine the way these services are structured to measure and amplify their impact, in particular the use of evidence based treatments. At the same time, an effort must be made to make these services more attractive to those in need.

Looking forward, a comprehensive analysis of the government policies that affect the operation of the systems of care would be invaluable. In particular, the drive to contain healthcare costs which has led to the widespread adoption of managed care techniques, moved the majority of Americans to private insurance plans and resulted in cuts to public mental health and substance use treatment programs. [82] The increased reliance on public funding for mental health and

substance use treatment is troubling as public funds have continuously been found inadequate at meeting the treatment needs of the U.S. population. [83] In particular, substance use treatments have shown a markedly low initiation and retention rate. A recent 10 year study of alcohol treatment in the U.S. observed increased barriers to treatment and a reduction in treatment use. [84] Practical public policy and increased funding towards mental health and substance use treatments can pave the way to overcoming the barriers to treatment found in this study. We recommend public awareness campaigns focused on reframing the norms and beliefs associated with mental and substance use disorders to move beyond the commonly held perception that treatment is not effective and that these types of problems can be best treated on one's own. Tailoring mental health and substance use services to specific regional contexts and sociodemographic nuances will ultimately place them in a better position to address the underlying problems decaying the engagement and retention rates of Puerto Ricans in need of treatment.

APPENDIX A: OPERATIONAL DEFINITIONS

Operational definitions of each measure are as follows**:**

A) <u>Last year prevalence rate of DSM-IV psychiatric disorders</u>: Using the Spanish version of the CIDI/DSM IV, we measured last 12-month prevalence rates of mental and substance use disorders in Puerto Rico. Last 12-months rate refers to the proportion of persons with one or more symptoms of a disorder, for which lifetime criteria were met, within the last 12 month period prior to the interview. A total of nine (9) specific psychiatric disorders were assessed in the study. These specific psychiatric disorders were clustered into three main categories: mood disorders (major depressive disorder, dysthymia and bipolar disorder I-II); anxiety disorders (social phobia, agoraphobia, generalized anxiety disorder, and panic disorder) and developmental neuropsychiatric disorder (attention deficit disorder with hyperactivity).

B) <u>Prevalence rates of Serious Mental illness</u>: 1993 Federal Register definition of Serious Mental Illness (SMI), mandated by Public Law 102-321 defines SMI as any adult 18 years and above who "currently or at any time during the past year has had a diagnosable mental, behavioral or emotional disorder of sufficient duration to meet diagnostic criteria specified with the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R), (for this report it would be DSM IV), that resulted in impairment, which substantially interferes with or limits the person's role or functioning in family, work, relationships or community activities. [1] The WHO- DAS 2.0 was used to estimate substantial impairment in functioning (*See Measurement Section).*

C) <u>Last year prevalence rates of DSM-IV substance use disorder</u>: We include last 12-month prevalence rates of substance use disorders according to DSM-IV criteria for: nicotine

dependence, alcohol abuse, alcohol dependence, alcohol abuse and/or dependence, drug abuse, drug dependence and drug abuse and/or dependence.

D) <u>Use of Services</u>: Refers to the percentage of the population that meet a criteria for a Serious Mental Illness and/or any substance dependence in the last 12-months and reported have received specialized services during the same period.

E) <u>Unmet need of services for substance use disorders</u>: For substance use disorders, unmet need is determined as the percent of the population who meet criteria for a substance dependence disorder in the last 12 month (whether related to alcohol or illicit drugs) and has not received any specialized services in the last year. Specialized services includes: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night), partial hospitalization, residential program, detoxification program, and methadone/buprenorphine treatment.

F) <u>Unmet need of services for Serious Mental Illness:</u> Refers to the percent of the population that meet a Serious Mental illness and did not use specialized services in the last 12 months of the interview. Serious Mental Illness was defined as meeting last 12-month CIDI/DSM IV criteria for a mental disorder and in addition have a substantial impairment in functioning using the cut-off points from the WHO-DAS 2.0. Specialized services includes: outpatient treatment, care with a psychologist, psychiatrist, social worker and/or psychotherapist, hospitalization (at least one night), partial hospitalization, residential program, detoxification program, and methadone/buprenorphine treatment.

G) <u>Perceived need</u>: Refers to an individual's own judgment about the necessity of treatment. We measured perceived needs among individuals who met criteria for: a) a Serious Mental

Illness and/or substance dependence in the last year and who reported having received no

service in the specialty sector in the last year.

H) <u>Barriers to treatment</u>: Barriers for not seeking treatment were explored for two groups. The

first group of barriers in full was asked to respondents who reported having received no

service in the specialty sector in the last year, and also reported perceived need for services

in the last 12 months. A total of seventeen barriers were ascertained for this group of

respondents: 1) health insurance would not cover treatment; 2) Feel better, didn't need help

anymore; 3) problem would get better by itself; 4) Concerned about treatment cost; 5)

unsure where to go or who to see; 6) treatment wouldn't work; 7) concerned about what

people would think about receiving treatment; 8) thought it would take too much time or be

inconvenient; 9) wanted to handle the problem by itself; 10) could not get an appointment;

11) scared of being put in a hospital; 12) not satisfied with available services; 13) received

treatment before and it didn't work; 14) problem didn't bother; 15) problem with

transportation or scheduling; 16) no health insurance and 17) not comfortable discussing

problems with a health professional.

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