Survey Shows...
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Hawaii BRFSS 2007

Mental Health and Stigma Report

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State of Hawaii

Hawaii BRFSS 2007 Mental Health and Stigma Report

Acknowledgement

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About the Hawaii Behavioral Risk Factor Surveillance System (HBRFSS)

The HBRFSS is an ongoing land-based random telephone survey of randomly selected adult residents 18 years and older on behaviors that affect health directly and indirectly. The HBRFSS is funded by the Centers for Disease Control and Prevention (CDC) as part of the national Behavioral Risk Factor Surveillance System (BRFSS). The HBRFSS has been in operation since 1986. For more information about HBRFSS results, please visit the following website: http://hawaii.gov/health/statistics/brfss/index.html. If the information you are looking for is not on the website, you may contact the state BRFSS coordinator via e-mail at brfsshi@doh.hawaii.gov or via phone at 808-586-4509.

MESSAGE FROM THE DIRECTOR

The State of Hawaii Department of Health is pleased to present the third report on mental health derived from the Hawaii Behavioral Risk Factor Surveillance System 2007 (HBRFSS 2007), a randomly selected landline telephone interviews of randomly selected adults 18 years and older.

This report, entitled "HBRFSS 2007 Mental Health and Stigma Report" presents the prevalence of mental health conditions among adults 18 years and older in the state of Hawaii. Included in this mental health prevalence are adults manifesting symptoms of serious psychological distress (SPD), adults manifesting symptoms of frequent mental distress (FMD) only, and adults receiving mental health treatment that do not manifest symptoms of FMD or SPD. In addition, two questions to measure stigma were included for the first time in the HBRFSS. The questions assessed adults' perception of the efficacy of treatment and perception of caring and sympathetic attitude toward mental illness. This report also presents findings on the attributes of adults with evidence of a mental health condition in terms of physical health, behaviors affecting health and demographic-socio-economic characteristics.

We hope that this report will be used for integrated planning, implementation and evaluation of programs to positively transform and improve the mental health condition of the people of Hawaii especially those in the most vulnerable circumstances.

This report would not have been possible without the participation of the people of Hawaii. Together we can work toward a healthier Hawaii.

Sincerely,

Chiyome L. Fukino, MD

Chiyome Leinaala Fukino, M.D.
Director of Health

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EXECUTIVE SUMMARY

This report showed that about 133,000 adults 18 years and older (13.9%) in the state of Hawaii had at least one mental health condition. Specifically, 2.3% reported serious psychological distress (SPD), 7.6% frequent mental distress (FMD) only, and 4.0% other mental health condition(s). More than half (53.4%) of adults or approximately 71,100 with a mental health condition were not receiving any type of mental health treatment, and about 61,900 adults received some mental health treatment.

Other key findings are as follows:

- Women were more likely than men to report a mental health condition (56.2% vs. 43.8%) and to receive mental health treatment (61.9% vs. 38.1%);
- Adults with a mental health condition were on average two years younger than those without; those with SPD or FMD were about the same age; and those receiving treatment were on average 10 years older than those not receiving treatment;
- Adults with a mental health condition who were not receiving treatment were most likely in a lower social-economic bracket;
- Among the five major ethnicities in Hawaii, Whites were more likely to have received mental health treatment while Hawaiian and Filipinos were less likely;

- The majority of the adult residents in the state agreed that "people are caring and sympathetic toward the mentally ill" and that "treatment of mental illness can help the mentally ill people live normal lives". However, sharp differences in attitudes and perceptions about these statements exist between adults with mental health conditions and those without, between adults receiving treatment and those not receiving treatment, and among adults with SPD, FMD and other mental health condition.

  When asked if they "strongly agree", "slightly agree", "neither agree nor disagree", "slightly disagree", or "strongly disagree" with the statement "Treatment can help people with mental illness lead normal lives",

  ⇒ The majority of all adults interviewed strongly agreed (61.3%) or slightly agreed (27.1%);

  ⇒ Of all respondents, nearly 1 in 50 said they strongly disagreed with the statement, in contrast to about 4 in 50 adults with SPD;

  ⇒ 74% of adults with a mental health condition who were receiving medical treatment strongly agreed vs.54.5% of adults with a mental condition who were not receiving medical treatment;

  ⇒ Women were more likely than men to report "strongly agree" (65.2% vs. 57.2%);

  ⇒ Filipinos (53.0%) and Hawaiians (56.8%) were less likely than other groups (60%) to respond, "strongly agree";

⇒ The percent of adults that responded, "strongly agree" to the statement increased with increasing education level completed. About half of adults with some high school education "strongly agree" versus more than 70% of adults with four-year college education.

When asked is they "strongly agree", "slightly agree", "neither agree nor disagree", "slightly disagree", or "strongly disagree" with the statement "People are generally caring and sympathetic to people with mental illness",

⇒ Nearly 30% of all adults strongly agreed and about 33% of adults slightly agreed with the statement;

⇒ Those with SPD were nearly twice as likely to "strongly disagree" with the statement as those without a mental health condition;

⇒ Adults with a mental health condition were more likely to "strongly disagree" with the statement (15.1%) than those without a mental health condition (9.6%). This is even more so for adults with SPD (18.7%) and adults receiving treatment (18.8%);

⇒ Filipino, Hawaiian and Japanese adults reported a stronger agreement than Whites to the statement (36.2%, 33.5% and 29.4% versus 24.9% respectively); nearly 18 out of every 50 White adults disagreed with the statement;

⇒ The percent of adults that responded, "strongly agree" to the statement declined with increasing education level completed. Nearly 44% of adults with less than high school education "strongly agree" versus 24% of adults with four-year college education.

- Findings from this survey also clearly indicate that significant health disparities exist between adults with mental health condition(s) and those without. SPD indicates a more severe mental health condition than FMD not only because of several symptoms involved in its determination, but more so because the analysis also showed the high prevalence of negative health behaviors and chronic health conditions among adults with SPD and many more number of days in poor health and an inability to do usual activities.

  For adults with a mental health condition(s):

  ⇒ They were more likely than adults with no mental health condition to engage in adverse health behaviors (e.g., smoking, heavy drinking and lack of physical activity, etc.) – those with SPD more so than those with FMD.

  ⇒ They had a significantly higher prevalence rate of obesity (30.2%) compared to those without a mental health condition (20.4%). The obesity prevalence rate of adults with SPD (44.6%) is significantly higher statistically than that of those with FMD (26.6%) or "Other MH-Tx" mental health condition(s) (28.5%).

- ⇒ They had a higher prevalence rate of chronic diseases (e.g., cardiovascular disease, diabetes, asthma and arthritis) than those without a mental health condition. The prevalence rates of cardiovascular disease, asthma, diabetes, and arthritis among adults with SPD were the highest and statistically significantly higher than among those without a mental health condition.
- ⇒ They were more likely to have some form of disability— 30 out of 50 for adults with SPD, and about 18 adults out of 50 for adults with either FMD or "Other MH-Tx" mental health condition(s) compared to those with out a mental condition (nearly 7 out of 50);
- ⇒ On an average 30 days time frame, they had more days when they were not able to do usual activities due to poor physical or mental health days than those without a mental condition-- significantly greater for adults with SPD (12 days) than adults with FMD only (5.4 days) or adults receiving treatment (2.3 days) or adults without a mental health condition (1 day).
- ⇒ Adults receiving treatment who have SPD or FMD spent nearly twice as many days unable to do usual activities due to mental health than adults not receiving treatment
- ⇒ For adults with SPD or FMD, most of the days not being able to do usual activities were due to mental health problems.
- ⇒ Overall, nearly half of adults with SPD (49.6%) reported their general health as "fair" or "poor"; much higher than for those with FMD only (31%), or those with "Other MH-Tx" mental health conditions (21.5%) and without a mental health condition (12.1%).

- Overall, adults with a mental health condition compared to adults without a mental condition, were less likely to be married (48% vs. 39.4%), more likely to lack emotional support (16.1% vs. 8.5%) and more likely to be dissatisfied with their lives (16.3% vs. 1.7%). The percentage was even higher for those with SPD: 53.5% not married, 32.1% rarely or never receiving emotional support and 45.7% dissatisfied or very dissatisfied with life.

INTRODUCTION

Mental illnesses are more widespread than most people realize. They account for approximately 25% of disabilities in the United States, Canada, and Western Europe and are a leading cause of premature death.[1, 2] Mental illnesses can influence the onset, progression, and outcome of other illnesses.[3]

Mental illness is treatable. People with mental illness can and do recover. Research conducted at the National Empowerment Center has shown that people can fully recover from even severe forms of mental illness.[4] Unfortunately there is a stigma associated with mental illness in spite of the possibility of recovery. Families, particularly of Asian origin, have difficulties in talking about or dealing with a family member who has a mental illness.[5,6] Mental illness is considered a family shame or embarrassment to the point of disownership of the ill family member. It is an undisputed fact that individuals who experience mental health issues are often faced with discrimination often caused by misunderstanding of their illness.[7] Many people fear the mentally ill person, characterized as violent, weird, and unreliable. Some people believe that mental illness is the result of a personality weakness or character flaw. Many believe that mental illness is not a true medical illness like heart disease or diabetes,[8] and they do not realize that mental illness can be treated. The negative perceptions, limited understanding and stigma associated with mental illness are barriers to getting or seeking help. Studies have shown that the majority of people with mental illnesses do not receive even minimally adequate treatment.[9]

Serious psychological distress (SPD) is a nonspecific measure of psychological distress. It is highly correlated with serious mental illness.[10] SPD is intended to characterize having at least one mental disorder, such as major depressive disorder, generalized anxiety disorder, or schizophrenia, as well as having serious impairment in functioning.[11,12]

The objectives of this report are:

(1) to estimate the number of adults with mental health condition in the state of Hawaii including the prevalence of serious psychological distress during the past 30 days prior to participating in the survey;
(2) to estimate the number of adults receiving medical treatment for their mental health condition(s) or emotional problem(s);
(3) to describe the attributes of adults with mental health condition(s) or problem(s); and,
(4) to describe mental health stigma from adults' belief that treatment can help the mentally ill and perceptions of caring and sympathy towards the mental ill.

DATA AND METHODS

The data in this report is from the HBRFSS 2007, a state-based, landline telephone health survey system of randomly selected non-institutionalized adults, aged 18 years and older. The BRFSS was established in 1984 by the CDC with 15 states participating including the

state of Hawaii. Currently, all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands participate in the BRFSS.

The HBRFSS 2007 findings are limited in that:

(1) population without a landline phone (e.g., homeless, cell phone users only), non-English speakers, those institutionalized, and severely impaired individuals unable to participate in the survey were excluded; and
(2) self-reported information cannot be confirmed by a health provider.

For any survey, it is essential that the response rate is reported. The response rate is the number of individuals who participated in the survey divided by the number of eligible participants. The response rate indicator used in HBRFSS 2007 is the Council on American Survey Response Organization (CASRO) index. The CASRO index for the 2007 HBRFSS survey is 51.9%. The details of the CASRO index calculation can be found at ftp://ftp.cdc.gov/pub/Data/Brfss/2007SummaryDataQualityReport.pdf.

In this report, stratification analysis and test of significant difference was done using α = 5% as significance criterion. SAS and SAS callable SUDAAN software were used to construct variables and generate statistical results.

Three indicators or measures were used to estimate the number of adults with a mental health condition or emotional problem during calendar year 2007.

1. Frequent mental distress (FMD). This indicator refers to individuals who reported 14 or more days that their mental health was "not good" when responding to the BRFSS question, "*Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?*"

2. Serious psychological distress (SPD). This indicator was derived from responses to the Kessler 6 questions, namely:
   (1) *"During the past 30 days about how often did you feel nervous?"*
   (2) *"During the past 30 days about how often did you feel hopeless?"*
   (3) *"During the past 30 days about how often did you feel restless?"*
   (4) *"During the past 30 days about how often did you feel so depressed that nothing could cheer you up?"*
   (5) *"During the past 30 days about how often did you feel that everything was an effort?"*
   (6) *"During the past 30 days about how often did you feel worthless?"*

Possible answers for any of the above 6 questions are "none of the time," "a little of the time", "some of the time," "most of the time," or "all of the time." Each answer was transferred into a corresponding score of 0 to 4 and all the scores for the six questions of each respondent were summed up to yield the Kessler 6 score. Respondents who had a score equal to or greater than 13 were identified as having (SPD). [11]

3. Mental health treatment (MH-Tx). This indicator was derived from a "Yes" response to the question, *"Are you now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem?"* Because this indicator can reflect a wide range of mental health conditions, we simply refer to it as the "Mental Health Treatment" (MH-Tx) indicator.

The sample distribution of HBRFSS 2007 according to mental health condition and medical mental health treatment status is presented in Table 1. Note that the sample size listed in the total for the corresponding mental health condition (SPD & FMD, SPD only, FMD only and "Other mental condition" or "Other MH-Tx") are all greater than 50, which is the minimum sample size for inclusion in the analysis. However, for stability of results, except in Figure 1 and Figure 2, the group classified as SPD & FMD and as SPD only is combined and is labeled as SPD in the rest of the figures and tables presented in this report. Note, that all numbers presented in the analysis and discussion section and beyond are weighted to the adult population of the state.

Table 1. Number of sampled respondents by mental health condition status and receiving mental treatment status, HBRFSS 2007.

Receiving mental treatment status	Mental health condition status					Total
	With mental health condition				Without mental health condition	
	SPD & FMD	SPD only	FMD only	Other MH-Tx		
Receiving	50	15	116	323	0	504
Not receiving	47	39	326	0	5453	5865
Unk/ref/missing	1	0	17	0	0	18
Total	98	54	459	323	5453	6387

ANALYSIS AND DISCUSSION

Prevalence

Overall, 8.6% of adults have FMD, 2.3% of adults have SPD, and 6.3% are either taking medicine or receiving treatment for their mental health condition. However, these statewide prevalence estimates are not mutually exclusive, meaning there are overlaps in adults that had FMD, SPD, and/or receiving treatment. Table 1 (presented in the previous section), shows the sample distribution of adults by receiving mental health treatment status and mental health condition status. It also shows the sample size of the overlaps. To calculate the population estimate of adults with a mental health condition, adults who have both SPD and FMD, adults who have SPD only, adults who have FMD only, and adults receiving mental health treatment but without FMD or SPD (Other MH-Tx) are added together. Figure 1 (page 11) is the percent population distribution of adults by mental health condition. Nearly 14% of adults in the state (about 133,000) have mental health condition(s) or mental health problem(s). Some adults had both FMD and SPD (1.3%),

some only SPD (1.0%), only FMD (7.6%) and some had other mental health conditions (4.0%, Other MH-Tx). The "Other MH-Tx" group includes adults not in the SPD or FMD group but taking medicine or receiving treatment for any type of mental health condition. Some of the adults in the SPD or FMD group were receiving treatment for any type of mental health condition or emotional problem and not necessarily for FMD or SPD. The percentage of those receiving and those not receiving treatment among adults with mental health condition is shown in Figure 2 (Tx in Figure 2 refers to Treatment).

Figure 1. Percent distribution of adults by mental health status, HBRFSS 2007

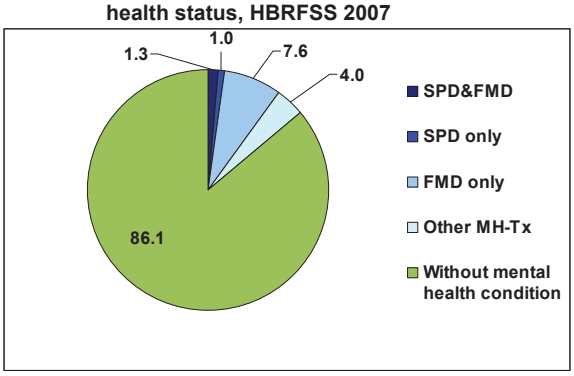


Figure 2. Percent distribution of adults with mental health condition by treatment status, HBRFSS 2007

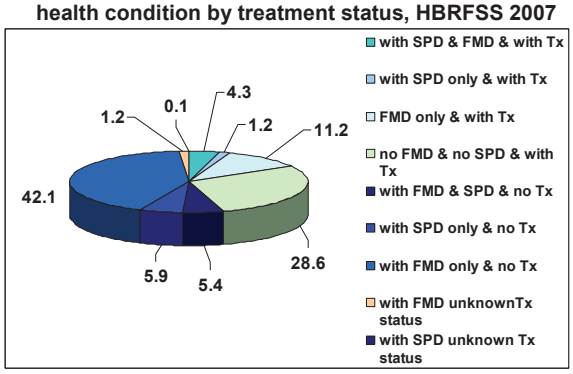


Figure 2 shows that the majority of those in the FMD only (42.1%) and/or SPD only (5.9%) or with both FMD & SPD (5.4%) group were not taking medicine or receiving treatment. Overall, of the estimated 133,000 adults with a mental health condition, about 71,100 individuals (53.4%) were not receiving treatment.

There were no significant differences in mental health condition prevalence by county as shown in Table 2. Similarly, there are no significant differences in the percent of adults receiving treatment by county.

Table 2. Prevalence of mental health condition and percent receiving treatment by county, HBRFSS 2007

	Mental health condition status		Type of mental health conditions			With mental health condition	
	Without *% (95%CI*)*	**With** *% (95%CI)*	**SPD** *% (95%CI)*	**FMD only** *% (95%CI)*	**Other MH-Tx** *% (95%CI)*	**Receiving treatment** *% (95%CI)*	**Not receiving treatment** *% (95%CI)*
State	86.5 (85.3-87.7)	13.5 (12.3-14.7)	2.3 (1.8-2.9)	7.3 (6.4 -8.3)	3.8 (3.3-4.4)	45.9 (41.3-50.5)	54.1 (49.5-58.7)
Hawaii	84.5 (82.0-86.7)	15.5 (13.3-18.0)	2.8 (1.8-4.3)	8.3 (6.6-10.4)	4.3 (3.4-5.6)	45.0 (37.0-53.2)	55.0 (46.8-63.0)
Honolulu	86.6 (85.0-88.1)	13.4 (11.9-15.0)	2.2 (1.6-3.0)	7.4 (6.2 -8.7)	3.8 (3.1-4.6)	45.8 (39.8-51.9)	54.2 (48.1-60.2)
Maui	87.9 (85.7-89.7)	12.1 (10.3-14.3)	2.2 (1.5-3.2)	6.1 (4.8 -7.9)	3.8 (2.9-5.0)	47.9 (39.4-56.5)	52.1 (43.5-60.6)
Kauai	88.3 (85.2-90.9)	11.7 (9.1 -14.8)	2.1 (1.1-3.8)	6.4 (4.5 -9.0)	3.2 (2.1-4.9)	46.5 (34.4-59.1)	53.5 (40.9-65.6)

*CI: confidence interval

There are a number of potential reasons adults were not receiving treatment for their mental health problems. Some of the reasons may be attitude/stigma, being unaware of having a mental health condition, socio-economic/financial hardships, restricted health

care access, or a combination of any of these reasons. Unfortunately, the data from BRFSS can only allude to association of socio-economic factors, health care access, and attitude or belief as possible reasons for not receiving treatment.

Health care access

Health care access defined in this report as having health care coverage and affordability of care are important particularly to people whose health is compromised either due to physical or mental problems.

The following two questions were used as indicators for health care access:

(1) *"Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?"*

(2) *"Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?"*

The first question is labeled "health care" and the second question is labeled "afford." These two questions are combined to form a health care access indicator. As shown in Table 3 Row 1, those with a mental health condition were significantly less likely to have health care insurance and less likely to see a doctor when needed because of financial hardship (82.3%) compared to those without a mental health condition (90.8%). In addition, Row 3 illustrates that despite having health care coverage, 11.5% of those with a mental health condition reported not being able to afford seeing a doctor, which is significantly higher than the 3.2% of those without a mental health condition.

Table 3. Health care access by mental health condition and medical treatment status, HBRFSS 2007

Health care access indicators	State *% (95%CI*)*	Mental health condition status		Receiving treatment *% (95%CI)*	Not receiving treatment *% (95%CI)*
		Without *% (95%CI)*	With *% (95%CI)*		
Afford and with health care	89.6 (88.5-90.7)	90.8 (89.6-91.8)	82.3 (78.4-85.6)	87.2 (82.2 -90.9)	78.2 (72.1- 83.3)
Afford and without health care	3.8 (3.1 - 4.7)	4.1 (3.3 - 5.0)	2.0 (1.1 - 3.7)	1.8 (0.7 - 4.1)	2.1 (0.9 - 5.2)
Can not afford and with health care	4.3 (3.7 - 5.0)	3.2 (2.6 - 3.8)	11.5 (8.7- 14.9)	8.5 (5.5-12.9)	14.1 (9.9 - 19.6)
Can not afford and without health care	2.1 (1.7 - 2.7)	1.8 (1.4 - 2.4)	4.1 (2.6 - 6.3)	2.5 (1.1 - 5.6)	5.4 (3.2 - 9.0)
Don't know /Refused	0.1 (0.0 - 0.3)	0.1 (0.0 - 0.3)	0.1 (0.0 - 0.3)	0.1 (0.0 - 0.5)	0.1 (0.0 - 0.6)
Total%	100	100	100	100	100

*CI: confidence interval

Finally, as shown in Row 4, the percentage of those without health care coverage who could not afford to see a doctor when needed is also significantly higher for those with a mental health condition (4.1%) versus those without (1.8%). A similar pattern emerged when the group with a mental health condition is stratified between those receiving

medical treatments versus those not receiving medical treatment. The group who did not receive treatment had a significantly lower percentage of health care coverage and was less able to afford seeing a doctor when needed (78.2%) than those receiving treatment (87.2%) (see Row 1). Conversely, among adults not receiving treatment, a higher percentage reported not being able to afford seeing a doctor when needed despite having health care coverage (see Row 3), 14.1% versus 8.5 % for the receiving treatment group. In addition as shown in Row 4, among adults not receiving treatment, a higher percentage could not afford to see a doctor and were also without health care coverage (5.4%) versus the receiving treatment group (2.5%). These findings suggest that adults in the group not receiving medical treatment are most likely to have a lower socio-economic status. The number of adults not receiving treatment for a mental health condition is estimated at about 71,100.

Other socio-economic characteristics

Affordability of health care is tied in with other financial or economic factors such as income and employment. The state of Hawaii requires employers to provide for health care coverage to workers rendering at least 20 hours of service per week. Income and employment in turn are directly associated with educational attainment. Financial or economic factors are also related to marital status depending on the employment or economic status of the spouse. Table 4 (page 14) shows the annual household income, employment status, education level completed and marital status by mental health status.

As can be seen in Table 4, adults with a mental health condition are more likely to live in a lower income household than adults without a mental health condition. Specifically, 41% of those with a mental health condition, compared to 27% of those without a mental health condition, are in households with an annual income of $35,000 or less. This is even more apparent for adults with a mental health condition who are not receiving medical treatment. 43% of adults not receiving medical treatment versus 38% for those receiving medical treatment live in households with $35,000 or less in annual income.

Looking at employment status, surprisingly, the percent of adults employed among the "not receiving mental health treatment" group is significantly higher than among the receiving treatment group (64.3% vs. 45.1%), and it is about the same as those without a mental health condition (64.3% vs. 65.8%). The low percent employed in the receiving treatment group is due to a significantly higher percentage of retirees (23.9%), unable to work adults (11.0%) and homemakers (10.3%), in comparison to those not receiving medical treatment (9.1%, 9.6%, and 4.6% respectively), and those without mental health conditions (20.6%, 2.0%, and 4.7% respectively). This suggests a different age structure for adults with a mental health condition who were not receiving treatment versus adults receiving medical treatment and versus adults without mental health conditions. The fact that the proportion of homemakers in the receiving treatment group is more than twice as large as those not receiving treatment (10.3% vs. 4.6%) and more than twice as large as those without mental health condition (10.3% vs. 4.7%) suggests the predominance of women receiving treatment.

Table 4. Socio-economic characteristics by mental health condition and medical treatment status, HBRFSS 2007

Socio-economic indicators	Overall *% (95%CI*)*	Mental health condition status		With mental health condition	
		Without *% (95%CI)*	**With** *% (95%CI)*	**Receiving treatment** *% (95%CI)*	**Not receiving treatment** *% (95%CI)*
Annual household income					
< $15,000	6.1 (5.4 - 7.0)	5.1 (4.4 -6.0)	12.7 (9.8 - 16.3)	12.5 (8.9 -17.3)	12.6 (8.5 - 18.4)
$15,000 - $24,999	10.9 (9.9 - 12.0)	10.3 (9.3- 11.4)	14.7 (11.8 -18.1)	12.2 (8.9 - 16.4)	17.1 (12.7-22.7)
$25,000 - $34,999	12.0 (10.9-13.1)	11.7 (10.6-12.9)	13.6 (10.6 -17.3)	13.6 (9.6 - 18.9)	13.5 (9.3 - 19.1)
$35,000 - $49,999	17.3 (16.0-18.6)	17.5 (16.1-19.0)	15.7 (12.4 -19.5)	17.6 (13.4-22.8)	14.2 (9.6 - 20.4)
$50,000 - $74,999	17.8 (16.5-19.1)	18.3 (16.9-19.8)	14.1 (11.2 -17.5)	14.9 (11.3-19.5)	13.1 (9.1- 18.4)
$75,000 or more	29.9 (28.4-31.5)	31.3 (29.6-33.0)	21.4 (18.0- 25.3)	23.4 (18.6-29.0)	19.9 (15.2-25.6)
Unk/Ref	6.0 (5.0 - 7.2)	5.7 (4.7 - 6.9)	7.9 (5.3 - 11.6)	5.9 (3.3 -10.2)	9.7 (5.6-16.0)
Total%	100	100	100	100	100
Employment status					
Employed	64.4 (62.8-66.0)	65.8 (64.0-67.4)	55.5 (50.9-60.0)	45.1 (39.1-51.3)	64.3 (57.4-70.6)
Homemaker	5.1 (4.4 - 5.8)	4.7 (4.1 - 5.5)	7.2 (5.3 - 9.9)	10.3 (6.9 - 15.1)	4.6 (2.7 - 7.9)
Student	4.1 (3.3 - 5.1)	4.0 (3.2 - 5.1)	4.5 (2.6 - 7.4)	3.4 (1.4 - 8.0)	5.5 (2.8-10.3)
Retired	20.0 (18.8-21.2)	20.6 (19.4-22.0)	15.8 (13.2-18.9)	23.9 (19.3-29.2)	9.1 (6.5-12.5)
Out of work	3.3 (2.6 - 4.1)	2.7 (2.1 - 3.6)	6.6 (4.5 - 9.6)	6.2 (3.7-10.1)	7.0 (3.9-12.1)
Unable to work	3.2 (2.6 - 3.8)	2.0 (1.5 - 2.7)	10.4 (8.0 - 13.4)	11.0 (8.4 - 14.4)	9.6 (6.1-14.8)
Refused	0.0 (0.0 -0.1)	0.1 (0.0 -0.2)	–	–	–
Total	100	100	100	100	100
Education level completed					
Less than 12 grade	5.4 (4.7 - 6.2)	5.1 (4.3 - 5.9)	7.7 (5.5 - 10.7)	5.4 (3.4 - 8.4)	9.7 (6.2 -14.9)
Grade 12 or GED	31.5 (29.9-33.2)	30.3 (28.6-32.1)	39.3 (34.7 - 44.1)	37.5 (31.5-43.9)	40.4 (33.6- 47.6)
College 1 -3 years	29.4 (27.8-31.0)	29.9 (28.2-31.6)	26.1 (22.3 - 30.2)	24.0 (19.5-29.3)	28.0 (22.3- 34.5)
College >=4 years	33.5 (32.0-35.1)	34.5 (32.9-36.2)	27.0 (23.4 - 30.9)	33.1 (27.8-38.9)	21.9 (17.3- 27.3)
Refused	0.2 (0.1 - 0.3)	0.2 (0.1 - 0.4)	–	–	–
Total%	100	100	100	100	100
Marital status					
Married	59.5 (57.7-61.2)	60.6 (58.7-62.5)	52.0 (47.3-56.7)	58.0 (51.9-63.8)	47.1 (40.3-54.0)
Unmarried couple	2.7 (2.2 - 3.4)	2.6 (2.1 - 3.4)	3.2 (2.0 - 5.1)	3.3 (1.8 - 6.2)	3.2 (1.7 - 6.1)
Divorced/separated	8.5 (7.7 - 9.3)	8.1 (7.3 -9.0)	11.1 (8.9 - 13.7)	12.9 (9.9 - 16.5)	9.2 (6.2-13.3)
Widowed	5.9 (5.3 - 6.6)	5.8 (5.2 - 6.5)	6.6 (5.0 - 8.8)	8.5 (5.9-12.1)	5.2 (3.3 - 8.0)
Never married	23.3 (21.6-25.1)	22.7 (20.9-24.6)	27.0 (22.4-32.0)	17.3 (12.6-23.2)	35.2 (28.3-42.9)
Refused	0.1 (0.1 - 0.2)	0.1 (0.1 - 0.3)	0.0 (0.0 - 0.3)	–	0.1 (0.0 -0.5)
Total%	100	100	100	100	100

*CI: confidence interval

The other socio-economic factor considered is the highest education level completed. Overall, adults with a mental health condition who were not receiving medical treatment had the lowest education attainment (i.e., less than 22% attended college for at least four

years versus 33% of adults receiving mental health treatment, and nearly 35% of adults without a mental health condition). The higher percentage with less than a high school education among adults not receiving treatment suggests again a younger age structure for this group compared to the receiving treatment group or to the "without a mental health condition" group. This younger age pattern for those not receiving treatment is also suggested in the marital status measure: About 47% of adults in the "not receiving treatment group" were married compared to 58% in the "receiving medical treatment" group and nearly 61% among adults "without a mental health condition". Conversely, close to 35% of adults in the "not receiving medical treatment" group were never married, more than twice as much as in the "receiving medical treatment" group (17.3%).

Age and gender

This section showed that overall, older adults were significantly more likely to receive treatment than younger adults, which confirms the earlier observation that a large percentage of adults receiving treatment were retirees who are more likely to have access to health care (see Table 4, page 14). In addition, females were significantly more likely to receive treatment than males.

Note that socio-economic status is often confounded by age and gender. The expectation is that financial stability increases as one gets older and vice versa.

Table 5. Gender and age distribution by mental health condition and medical treatment status, HBRFSS 2007

	Overall *% (95%CI*)*	Mental health condition status		With mental health condition	
		Without *% (95%CI)*	**With** *% (95%CI)*	**Receiving treatment** *% (95%CI)*	**Not receiving treatment** *% (95%CI)*
Gender					
Male	49.3 (47.6 - 51.1)	50.2 (48.4 - 52.0)	43.8 (39.1 - 48.6)	38.1 (32.1 - 44.5)	48.6 (41.7 - 55.6)
Female	50.7 (48.9 - 52.4)	49.8 (48.0 - 51.6)	56.2 (51.4 - 60.9)	61.9 (55.5 - 67.9)	51.4 (44.4 - 58.3)
Total%	100	100	100	100	100
Age groups					
18-24 years	12.7 (11.3 - 14.4)	12.5 (10.9 - 14.3)	14.4 (10.5 - 19.6)	7.0 (3.6-13.0)	21.1 (14.8 - 29.2)
25-34 years	16.2 (14.9 - 17.7)	16.1 (14.7 - 17.7)	16.9 (13.5 - 21.0)	10.4 (7.1 - 14.9)	22.5 (17.0 - 29.1)
35-44 years	17.7 (16.5 - 19.0)	18.0 (16.7 - 19.4)	16.2 (13.3 - 19.6)	16.2 (12.1- 21.5)	16.0 (12.1 - 20.7)
45-54 years	19.2 (18.0 - 20.4)	18.8 (17.6 - 20.1)	21.8 (18.4 - 25.5)	24.6 (19.8- 30.1)	19.4 (15.0 - 24.8)
55-64 years	15.7 (14.7 - 16.9)	15.6 (14.5 - 16.8)	16.8 (14.0 - 20.0)	20.9 (16.8- 25.8)	12.9 (9.5 - 17.2)
>=65 years	18.3 (17.2 - 19.5)	19.0 (17.8 - 20.3)	13.8 (11.4 - 16.8)	20.9 (16.7- 25.9)	8.2 (5.7 - 11.6)
Total%	100	100	100	100	100

*CI: confidence interval

The gender distribution in the state of Hawaii is close to even (51% female versus 49% male, see Table 5, page 15). Among those without mental health condition, the same observation applies (49.8% female vs. 50.2% male). However, among those with a mental

health condition, the percent of males is significantly lower than the percent of females (43.8% vs. 56.2%). When the group with a mental health condition is stratified between receiving mental health treatment and not, the difference between genders is even greater, with 38% males versus 62% females within those receiving treatment and nearly even gender distribution in the not receiving treatment group (48.6% male vs. 51.4% female, see Table 5). This suggests that women are more likely to report a mental health condition and more likely to receive medical treatment than men. This statement is also reflected in Table 17 of Appendix E, which shows the prevalence within gender and age rather than the compositional makeup of adults with and without mental health and with and without treatment among adults with mental health.

In looking at the age distribution, adults with a mental health condition are generally younger than those without a mental health condition (mean age of 45.3 vs. 47.2 years, Table 6). This is even more pronounced for those adults without medical treatment (mean age of 40.2 years) compared to adults receiving medical treatment (mean age 51.3 years).

Table 6. Mean age (in years) by mental health condition and medical treatment status, HBRFSS 2007

	State *years (95%CI*)*	Mental health condition status		With mental health condition	
		Without *years (95%CI)*	**With** *years (95%CI)*	**Receiving treatment** *years (95%CI)*	**Not receiving treatment** *years (95%CI)*
State	46.9 (46.2 - 47.6)	47.2 (46.4 - 47.9)	45.3 (43.5 - 47.1)	51.3 (48.9 - 53.6)	40.2 (37.8 - 42.6)
Male	45.4 (44.4 - 46.4)	45.5 (44.5 - 46.5)	44.5 (41.6 - 47.5)	52.8 (48.8 - 56.7)	39.0 (35.4 - 42.5)
Female	48.4 (47.5 - 49.3)	48.8 (47.9 - 49.8)	45.9 (43.7 - 48.1)	50.4 (47.4 - 53.3)	41.4 (38.4 - 44.4)
SPD	–	–	42.1 (38.4 - 45.8)	48.4 (43.6 - 53.2)	38.9 (34.2 - 43.5)
FMD only	–	–	41.7 (39.3 - 44.1)	45.4 (40.1 - 50.8)	40.6 (37.8 - 43.3)
Other mental health condition(s)	–	–	54.1 (51.4 - 56.8)	54.1 (51.4 - 56.8)	–

*CI: confidence interval

In addition, the age group distribution of those with medical treatment and those without medical treatment has an opposite pattern as shown in Table 5. More than 20% were in the lower age groups (i.e., below 35) among those not receiving medical treatment, and more than 20% were in the higher age groups (45 and above) among those receiving medical treatment. This suggests that younger adults are less likely to receive or seek treatment than older adults. This statement is also reflected in Table 17 of Appendix E. The age composition difference is evident when looking at type of mental health condition as shown in Table 6. Adults with SPD who were not receiving treatment are the youngest group with mean age of 38.9 years and those receiving treatment with SPD were almost ten years older on average (48.4 years) while adults with "Other MH-Tx" mental problems were even older, on average in their mid fifties (54.1 years). In looking at age differences by gender, there is no significant mean age difference between men and women in the group with mental health condition. In other words, on average men with a mental health condition were just as old as women with a mental health condition. However, for those without a mental health condition, women are generally older than men (mean age 48.8 years for women vs. 45.5 years for men).

Ethnicity

Ethnicity is a complex concept to measure, especially in Hawaii where many individuals are of mixed race and ethnicity. Furthermore, in addition to cultural beliefs and attitude, ethnicity is strongly associated with political, historical, and socio-economics factors. When looking at these findings, one should keep in mind the complexity of this measure in interpreting the data (e.g., similar significant differences would most likely be observed if we could look at the data based on other complex factors such as neighborhoods or job categories). One recurring observation is that Hawaiians (including part Hawaiians) are more likely to be found in lower economic status.[13,14] Most indicators of health also point to the poor health of Hawaiians (including part Hawaiians). With this as a backdrop, Table 7 shows the ethnic distribution of adults by mental health condition(s) and by treatment status.

Table 7. Ethnic distribution of adults by mental health conditions and medical treatment status, BRFSS 2007

Ethnic groups	Overall *% (95%CI*)*	Mental health condition status		With mental health condition	
		Without *% (95%CI)*	With *% (95%CI)*	Receiving treatment *% (95%CI)*	Not receiving treatment *% (95%CI)*
White	31.7 (30.3-33.2)	31.2 (29.7-32.8)	34.7 (30.7-39.0)	48.2 (42.2-54.3)	22.8 (18.1- 28.2)
Hawaiian	13.8 (12.7-15.0)	13.7 (12.5-15.1)	14.4 (11.5-17.8)	9.1 (6.4 -12.9)	19.0 (14.4- 24.7)
Chinese	5.6 (4.8 - 6.5)	5.8 (5.0 - 6.7)	4.3 (2.3 - 7.8)	4.0 (2.1 - 7.4)	4.6 (1.8 -11.6)
Filipino	17.7 (16.2-19.2)	17.8 (16.2-19.5)	16.7 (13.0-21.1)	10.5 (7.0 -15.5)	21.8 (16.0-28.9)
Japanese	21.9 (20.6-23.3)	22.8 (21.3-24.3)	16.7 (13.7-20.1)	19.1 (14.7-24.4)	14.7 (10.9 -19.5)
Others	9.3 (8.3-10.4)	8.7 (7.6 - 9.9)	13.3 (10.1-17.1)	9.0 (5.6-14.1)	17.2 (12.4 - 3.3)
Total%	100	100	100	100	100

*CI: confidence interval

Among adults with a mental health condition, only 16.7% are Japanese, a significantly lower percentage when compared to the general population without a mental health condition (22.8%). On the other hand, smaller ethnic populations grouped together as "Others" have a proportion of mental health condition significantly higher compared to those without a mental health condition (13.3% vs. 8.7%). When adults with a mental health condition are stratified by receiving medical treatment or not, it shows that the majority of those receiving treatment are Whites, 48.2%, a significantly larger White proportion than found in the general population without a mental health condition, 31.2% of those not receiving treatment (22.8%). In contrast, the proportion receiving treatment who is Hawaiian or Filipino was significantly lower (9.1% and 10.5% respectively) than found in the general population without mental health condition (13.7% and 17.8% respectively) or not receiving treatment (19.0% and 21.8%). Note also that 17.2% of those not receiving medical treatment belong to the ethnic category "Others". In brief, Whites are overly represented; Hawaiian, Filipinos and "Others" are underrepresented in receiving mental health treatment when compared to the general population. The findings suggest that Hawaiians, Filipinos and "Others" with a mental health condition were less likely to receive treatment or seek treatment. The same findings are reflected when looking at the

prevalence of mental health condition and the prevalence of treatment within ethnic groups (see Table 17 of Appendix E).

Attitudes, perceptions, and stigma

In 2007, for the first time, the BRFSS included two questions regarding stigma toward mental illness:

These next questions ask about peoples' attitudes toward mental illness and its treatment. How much do you agree or disagree with these statements about people with mental illness...

(1) Treatment can help people with mental illness lead normal lives. Do you –agree slightly or strongly, or disagree slightly or strongly?

(2) People are generally caring and sympathetic to people with mental illness. Do you – agree slightly or strongly, or disagree slightly or strongly?

As shown in Table 8 (page 19), attitude toward the efficacy of treatment for people with a mental illness varied significantly between ethnicities, gender, and whether or not an individual has a mental health condition. Overall, 88% of adults interviewed responded that treatment can help people with mental illness lead a normal life (61.3% strongly agree and 27.1% slightly agree). Only 7% of adults expressed a negative view (4.5% slightly disagree and 2.1% strongly disagree). However, there were differences among ethnic origins. While over fifty percent of the Filipinos (53.0%), Hawaiians (56.8%) and the aggregate small ethnic groups called "Others" (54.4%) strongly agreed that treatment can help mentally ill people lead normal lives, the proportion is not as high as for Whites (69.3%) and Chinese (64.8%). In addition, Filipinos, Hawaiians and "Others" groups reported the largest proportion of disagreement (i.e., slightly disagree and strongly disagree total 11.2%, 9.7%, 10.3% respectively) and Chinese (4.1%) and Whites (3.4%) reported the smallest proportion of disagreement. These findings may partially explain the over representation of Whites and the under representation of Filipinos, Hawaiians and "Others" in the group that are receiving medical treatment in comparison to the group not receiving treatment (refer to Table 7). Looking at gender, a significantly greater percentage of women than men (65.2% vs. 57.2%) strongly agreed that treatment can help mentally ill people lead normal lives. However, the percentage in slight agreement is higher for men 29.8% than for women 24.5%. These findings may partially explain why women are overrepresented in the group receiving treatment compared to the group not receiving treatment (see Table 5). The presence of mental health condition may influence one's positive attitude toward treatment. On the contrary, the results indicate that the combined percentage of positive response or agreement is statistically significantly higher for those without a mental health condition (88.9%) than for those with a mental health condition (84.7%, $p=0.027$).

The experience of receiving treatment for mental health conditions may affect one's belief that mentally ill person can have a normal life when treated. Among adults receiving treatment for any type of mental condition, 74.0% strongly agreed that treatment can help mentally ill people lead normal lives compared to about 55% for adults not receiving

Table 8. Treatment can help people with mental illness lead normal lives, HBRFSS 2007

	Strongly agree *% (95%CI*)*	Slightly agree *% (95%CI)*	Neither agree nor disagree *% (95%CI)*	Slightly disagree *% (95%CI)*	Strongly disagree *% (95%CI)*	Unk/Ref *% (95%CI)*	Total *%*
State	61.3 (59.6 - 63.0)	27.1 (25.5 - 28.8)	1.6 (1.3 - 2.1)	4.5 (3.7 - 5.4)	2.1 (1.6 - 2.7)	3.3 (2.8 - 3.9)	100
Ethnicity							
White	69.3 (66.8 - 71.7)	22.1 (20.0 - 24.4)	1.8 (1.2 - 2.7)	2.2 (1.6 - 3.1)	1.9 (1.1 - 3.1)	2.7 (2.1 - 3.6)	100
Hawaiian	56.8 (52.1 - 61.5)	27.9 (23.9 - 32.3)	1.8 (1.0 - 3.2)	5.9 (3.9 - 8.8)	3.8 (2.3 - 6.2)	3.7 (2.2 - 6.4)	100
Chinese	64.8 (57.5 - 71.5)	25.3 (19.7 - 32.0)	2.2 (1.0 - 4.9)	3.4 (1.6 - 7.0)	–	4.3 (2.1 - 8.4)	100
Filipino	53.0 (48.0 - 58.0)	31.1 (26.6 - 35.9)	1.3 (0.6 - 2.8)	8.3 (5.5-12.3)	2.9 (1.7 - 5.0)	3.4 (2.1 - 5.4)	100
Japanese	61.3 (57.7 - 64.8)	30.1 (26.7 - 33.7)	1.4 (0.8 - 2.3)	2.9 (1.9 - 4.3)	1.0 (0.6 - 1.8)	3.4 (2.5 - 4.5)	100
Others	54.4 (48.0 - 60.6)	29.6 (23.8 - 36.2)	1.7 (0.7 - 3.9)	7.7 (4.8-12.1)	2.6 (1.3 - 5.2)	4.0 (2.5 - 6.3)	100
Gender							
Male	57.2 (54.5 - 59.9)	29.8 (27.4 - 32.4)	1.7 (1.2 - 2.5)	5.0 (3.9 - 6.3)	2.7 (2.0 - 3.7)	3.5 (2.7 - 4.6)	100
Female	65.2 (63.0 - 67.3)	24.5 (22.5 - 26.5)	1.5 (1.1 - 2.1)	4.1 (3.0 - 5.4)	1.6 (1.0 - 2.4)	3.2 (2.6 - 3.9)	100
Mental health status							
Without mental health condition	60.9 (59.0 - 62.8)	28.0 (26.3 -29.8)	1.6 (1.2 - 2.0)	4.4 (3.6 - 5.4)	1.9 (1.4 - 2.5)	3.2 (2.7 - 3.9)	100
With mental health condition	63.4 (58.7 - 67.9)	21.3 (17.6 - 25.6)	2.2 (1.1 - 4.1)	5.2 (3.2 - 8.3)	3.8 (2.4 - 6.1)	4.1 (2.7 - 6.1)	100
Treatment status							
With treatment	74.0 (68.1 - 79.1)	15.6 (11.5 - 20.8)	0.9 (0.4 - 2.3)	2.6 (1.1 - 6.2)	2.9 (1.4 - 6.0)	4.0 (2.1 - 7.2)	100
Without treatment	54.5 (47.5 - 61.3)	26.1 (20.4 - 32.8)	3.2 (1.5 - 6.8)	7.4 (4.2-12.6)	4.6 (2.5 - 8.3)	4.2 (2.3 - 7.3)	100
Type of condition							
SPD	57.6 (45.9 - 68.5)	16.5 (9.9 - 26.0)	–	12.9 (5.8-26.3)	8.2 (3.7-17.0)	–	100
FMD	56.7 (49.8 - 63.4)	29.2 (23.2 -35.9)	2.6 (1.2 - 5.7)	4.1 (2.2 - 7.5)	3.1 (1.5 - 6.0)	4.4 (2.5 - 7.7)	100
Other MH-Tx	79.5 (72.5 - 85.1)	9.6 (6.1 -14.7)	–	2.6 (0.7 - 9.2)	2.7 (0.9 - 7.6)	4.6 (2.2 - 9.1)	100

*CI: confidence interval

treatment. In addition, only about a quarter of those not receiving treatment responded that they slightly agreed that treatment can help. Combined, 80.6% of those not receiving treatment agreed that treatment can help versus 89.6% of those receiving treatment (statistically significantly different at p = 0.009). Conversely, 12% of adults not receiving treatment disagreed or strongly disagreed that treatment can help which is statistically significantly higher than the 5.5% of those receiving treatment (p=0.025). When looking at the type of mental health condition, a different picture emerged: The majority of adults in the group "Other MH-Tx" strongly agreed (79.5%) that treatment can help compared to a much smaller majority among adults with SPD (57.6%) and FMD (56.7%). This significant difference is probably due to the fact that adults in "Other MH-Tx" category were all receiving treatment and did not exhibit the symptoms of FMD or SPD at the time of the survey, thus suggesting that treatment actually helped them. However, only some of those in the SPD or FMD group were receiving treatment (see Figure 2, page 11).

When analyzed by age, young adults in age group 18 to 24 years were significantly less likely to strongly agree (41.8%) about the efficacy of treatment than older adults (see Table 14 of Appendix B). This same age group also has the largest proportion of "slightly disagree" (10.1%). Table 14 also shows that age group 35 and older have the largest agreement (above 60%), regarding the efficacy of treatment. Finally, adults who were unable to work or out of work, students, and those who lived in household with annual income below $25,000 or those who did not report their annual income (i.e., unknown) have less positive attitudes on the efficacy of treatment.

Table 9. People are generally caring and sympathetic to people with mental illness, HBRFSS 2007

	Strongly agree *% (95%CI*)*	**Slightly agree** *% (95%CI)*	**Neither agree nor disagree** *% (95%CI)*	**Slightly disagree** *% (95%CI)*	**Strongly disagree** *% (95%CI)*	**Unk/Ref** *% (95%CI)*	**Total** *%*
State	29.9 (28.3 - 31.5)	33.4 (31.8 - 35.1)	2.5 (2.0 - 3.0)	20.7 (19.3 - 22.1)	10.3 (9.3 - 11.5)	3.2 (2.7 - 3.9)	100
Ethnicity							
White	24.9 (22.7 - 27.3)	33.2 (30.8 - 35.8)	2.8 (2.1 - 3.7)	24.3 (22.1 - 26.5)	12.2 (10.6-14.0)	2.6 (1.9 - 3.5)	100
Hawaiian	33.5 (29.2 - 38.1)	32.0 (27.7 - 36.6)	2.0 (0.9 - 4.2)	18.8 (15.4 - 22.7)	12.0 (9.1 - 15.6)	1.8 (1.1 - 3.1)	100
Chinese	29.0 (22.4 - 36.7)	30.4 (24.5 - 37.1)	2.4 (1.1 - 5.3)	24.2 (17.5 - 32.5)	10.9 (6.7 - 17.2)	3.0 (1.4 - 6.0)	100
Filipino	36.2 (31.6 - 41.1)	30.8 (26.3 - 35.7)	2.0 (1.1 - 3.6)	19.7 (15.9 - 24.1)	7.5 (5.3 -10.6)	3.8 (2.2 - 6.5)	100
Japanese	29.4 (26.2 - 32.9)	38.3 (34.9 - 41.9)	2.2 (1.5 - 3.4)	18.6 (16.0 - 21.5)	6.9 (5.3 - 9.0)	4.5 (3.3 - 6.0)	100
Others	30.9 (25.5 - 36.8)	31.3 (25.6 - 37.6)	3.6 (2.0 - 6.4)	16.0 (12.2 - 20.8)	14.6 (10.6-19.9)	3.6 (2.1 - 6.1)	100
Gender							
Male	30.1 (27.7 - 32.7)	36.6 (34.0 - 39.2)	2.3 (1.6 - 3.2)	18.7 (16.7 - 20.9)	9.6 (8.1 - 11.3)	2.7 (2.0 - 3.6)	100
Female	29.5 (27.5 - 31.6)	30.4 (28.4 - 32.4)	2.7 (2.1 - 3.4)	22.6 (20.8 - 24.5)	11.0 (9.7 - 12.5)	3.9 (3.1 - 4.8)	100
Mental health status							
Without mental health condition	30.5 (28.7 - 32.2)	34.0 (32.3 - 35.8)	2.4 (1.9 - 2.9)	20.3 (18.8 - 21.8)	9.6 (8.5 -10.7)	3.3 (2.7 - 4.0)	100
With mental health condition	25.8 (21.9 - 30.1)	29.7 (25.7 - 34.2)	3.2 (1.9 - 5.4)	23.1 (19.3 - 27.4)	15.1 (12.1-18.8)	3.0 (1.9 - 4.8)	100
Treatment status							
With treatment	24.9 (20.0 - 30.6)	26.5 (21.7 - 32.0)	2.7 (1.4 - 5.4)	22.9 (18.2 - 28.3)	18.8 (14.0-24.6)	4.2 (2.3 - 7.6)	100
Without treatment	26.6 (20.9 - 33.2)	32.4 (26.2 - 39.2)	3.6 (1.7 - 7.6)	23.2 (17.6 - 30.0)	12.1 (8.5 - 17.0)	2.1 (1.1 - 3.9)	100
Type of condition							
SPD	31.2 (21.6 - 42.7)	25.2 (17.0 - 35.7)	–	20.6 (12.8 - 31.3)	18.7 (11.1-29.6)	–	100
FMD	23.5 (18.2 - 29.8)	30.5 (24.5 - 37.2)	3.8 (1.9 - 7.6)	25.2 (19.5 - 31.8)	15.4 (11.1-21.0)	1.7 (0.8 - 3.5)	100
Other MH-Tx	26.9 (20.8 - 34.1)	31.1 (24.8 -38.1)	2.4 (1.0 - 5.5)	20.8 (15.5 - 27.2)	12.5 (8.8 - 17.5)	6.4 (3.4-11.6)	100

*CI: confidence interval

The pattern of responses to the question on whether or not people are generally caring and sympathetic to people with mental illness were reversed compared to the pattern of responses to the question on efficacy of treatment for mental illness. In other words, the ethnic groups, gender, and mental health status who responded most positively about treatment responded least positively about caring and vice versa (See Tables 8 and 9).

Overall, the agreement to the statement that people are caring and sympathetic toward mentally ill is not resoundingly positive. Nearly 33.4% of all adults slightly agreed with

the statement, and another 29.9% strongly agreed, giving a total positive attitude of 63.3%. The negative perception among Whites is nearly 24% slightly disagreed and 12% strongly disagreed for a combined negative of 36%; i.e., more than a third of the White adult population does not think that people are caring and sympathetic toward people with mentally illness. On the other hand, Filipinos, Hawaiians and Japanese reported a more positive perception. More than a third of adult Filipinos (36.2%) and Hawaiians (33.5%) strongly agreed that people are generally caring and sympathetic toward people with mentally illness. The Japanese strongly agreed response is only 29.4%, but a significantly larger portion (38.3%) responded agreed slightly resulting in an overall positive percent of 67.7%, which is not significantly different from Hawaiians (65.5%) and Filipinos (67.0%). The percent differences in perception of caring and sympathy by Whites versus Filipinos, Whites versus Hawaiians and Whites versus Japanese are statistically significantly different at $p < 0.05$. There are statistically significant gender differences. Men's perception was more positive that people are caring and sympathetic toward people with mentally illness (66.7%) than women's perception (59.9%). Conversely, nearly a third of the women disagreed (33.6%) that people are generally caring and sympathetic versus 28.3% for men.

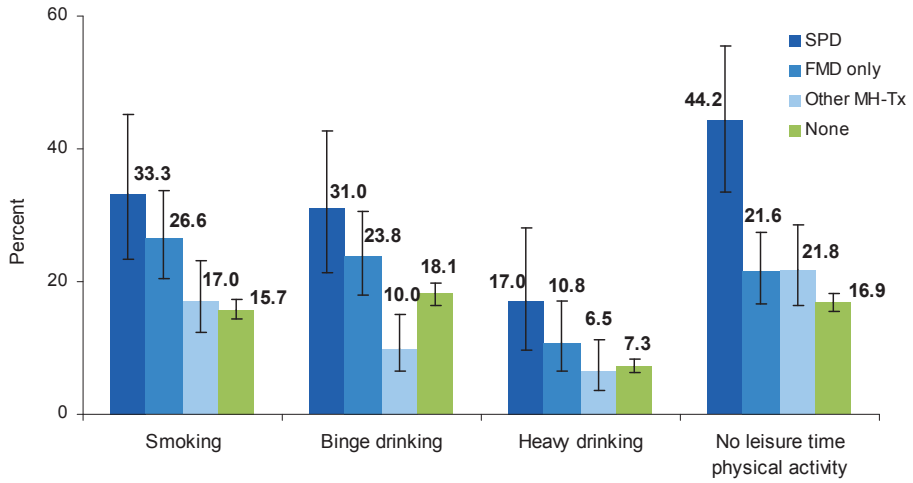
A significantly higher negative perception was reported by adults with mental health condition (15.1%) than adults without a mental health condition (9.6%). Similarly, adults receiving treatment were more likely to disagree about people being caring and sympathetic toward people with mental illness than adults not receiving treatment (41.7% versus 35.3%), although the difference is not statistically significant. By category of adults with mental health condition, the percentage of strong disagreement is highest among adults with SPD (18.7%), followed by FMD (15.4%) and "Other MH-Tx" (12.5%) although the differences are not statistically significant. It is worth noting that the percentage who responded, "do not know/refused" is highest for "Other MH-Tx" (6.4%), suggesting larger reluctance or lack of decision by adults in "Other MH-Tx" group compared to all the groups discussed.

In regard to education level, the more educated the respondents, the less likely they were to agree with the statement that people are generally caring and sympathetic toward people with mental illness (see Table 15 of Appendix C). Stated the other way, the less education the respondents had, the more they tended to believe that people are generally caring and sympathetic toward people with mental illness. This significant finding is difficult to interpret. It could suggest that further education may be necessary to expose the amount of stigma and discrimination that individuals with mental illness experience on their way to recovery. It could also mean that less educated people tend to be more caring and sympathetic toward people with mental illness than more educated people. Because the question is about perception, only limited conclusions can be drawn from this significant finding. Further research does seem warranted to understand better the relationship between education and attitude. (Note that more educated respondents also tended to be more positive about the efficacy of treatment than less educated respondents).

Mental health and health risk behaviors

Figure 3 (see also Table 13 of Appendix A) reveals that adults with SPD are statistically significantly more likely to engage in behaviors that negatively affect health compared to the adult population that do not have a mental health condition. The prevalence rate of smoking[i] is highest among adults with SPD (33.3%) and statistically significantly different from adults in the "Other MH-Tx" (17.0%) and from adults without a mental health condition (15.7%). The second highest smoking prevalence rate is among adults with FMD only (26.6%), and is statistically significantly higher than for adults without a mental health condition (15.7%). However, adults with "Other MH-Tx" mental health condition have a smoking prevalence rate slightly higher, but not statistically different, from the adult population without a mental health condition (17.0% vs. 15.7%).

Figure 3. Prevalence of health risk behaviors by type of mental health conditions, HBRFSS 2007



Note that the low smoking prevalence in the "Other MH-Tx" group may be attributed to the older age of that group and to the fact that all of them are receiving treatment and are, therefore, more likely to be encouraged to quit smoking (see Table 6).

The binge drinking[ii] prevalence rate is highest among adults with SPD and statistically significantly different from adults in the "Other MH-Tx" (10.0%) and from adults without a mental health condition (18.1%). In contrast, the binge drinking prevalence rate is lowest for adults with "Other MH-Tx" (10.0%), which is statistically significantly lower than for adults without a mental health condition (18.1%), adults with FMD (23.8%), and adults with SPD (31.0%). The chronic heavy drinking[iii] prevalence rate is also lowest in adults with "Other MH-Tx" (6.5%) and highest among adults with SPD (17.0%). The SPD heavy drinking prevalence rate (17.0%) is statistically significantly higher compared to adults without a mental health condition (7.3%).

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[i] A current smoker in BRFSS is defined as an adult who had smoked 100 cigarettes in his/her life and smokes everyday or some days.

[ii] Binge drinking in BRFSS is defined as having five or more drinks for men or four or more drinks for women on an occasion in the past 30 days prior to the survey.

[iii] Heavy drinking in BRFSS is defined as having more than two drinks per day for men or more than one drink per day for women in the past 30 days prior to the survey.

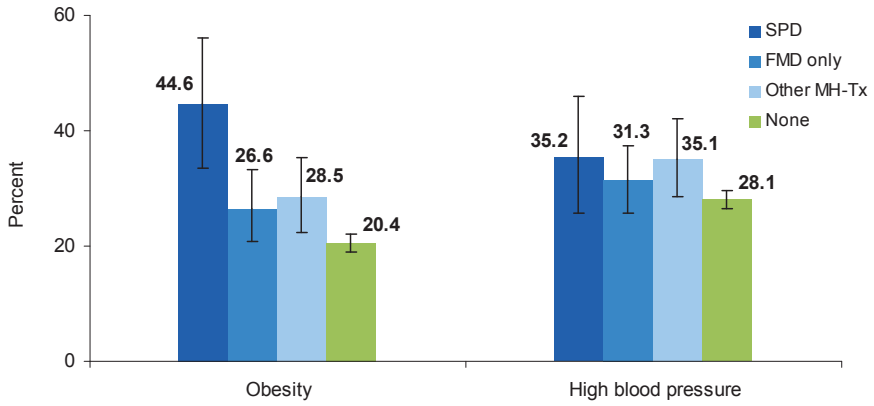
The percentage of adults with SPD not engaged in leisure time physical activity is staggeringly high at 44.2% versus the other groups: FMD (21.6%), "Other MH-Tx" mental health condition (21.8%) and adults without a mental health condition (16.9%).

Mental health and chronic conditions

Mental health and physical health are closely related as shown in two earlier reports[14,15] and several other studies[16,17,18,19].

Figure 4 (see also Table 13 of Appendix A) shows that adults in the SPD group are more than twice as likely to be obese[iv] than adults without a mental health condition (44.6% vs. 20.4%). The prevalence of obesity among adults with FMD (26.6%) and with "Other MH-Tx" mental health condition (28.5%) is statistically similar. However, it is statistically significantly lower than for adults with SPD (44.6%) but statistically higher than for adults without a mental health condition (20.4%). These results may be attributed to the fact that about the same proportion are not engaged in leisure time physical activity

Figure 4. Prevalence of obesity, high blood pressure by type of mental health conditions HBRFSS 2007



as discussed previously (see Figure 3). Among adults with SPD, 44% were not engaged in leisure time physical activity, over 44 % were obese and 35% had high blood pressure. The prevalence of high blood pressure among adults with SPD (35.2%), FMD only (31.3%), "Other MH-Tx" mental health condition (35.1%) is not statistically different from each other. Overall, adults without a mental health condition have a lower prevalence of high blood pressure (28.1%) than adults with a mental health condition (33.0%, see Table 13 of Appendix A).

The prevalence of cardiovascular diseases[v] such as heart attack, stroke or angina is significantly higher for adults who have a mental health condition than for those without (10.4% vs. 6.1%; see Table 13 of Appendix A). The prevalence is highest for adults with

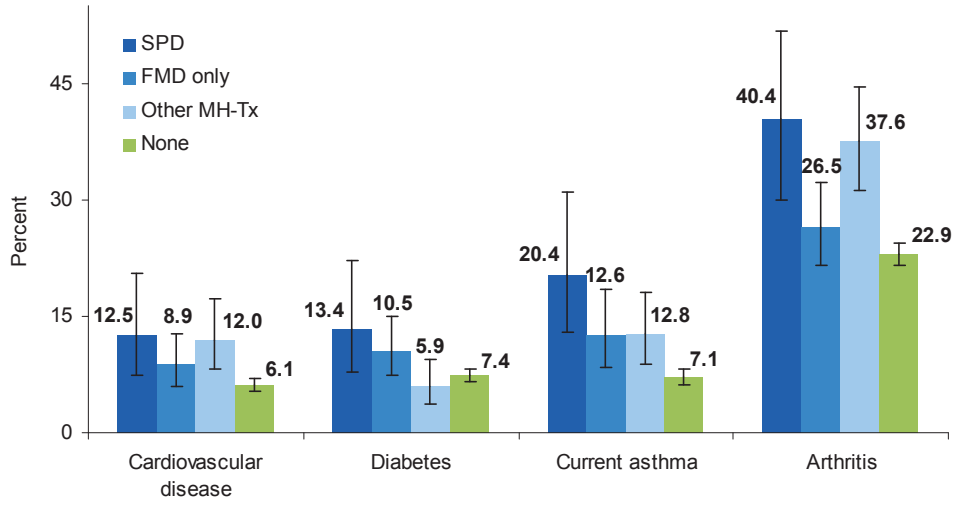
[iv] Body mass index (BMI) is defined as weight in kilograms divided by the square of height in meters. In this report, obesity is defined as BMI equal to or greater than 30.

[v] Cardiovascular diseases in this report refer to heart attack (myocardial infarction) or stroke or angina heart disease.

SPD (12.5%), statistically higher than for adults without a mental health condition (6.1%), but not statistically significantly different from adults with FMD (8.9%) or "Other MH-Tx" (12.0%) as shown in Figure 5 (page 24).

The prevalence of diabetes is higher for adults with a mental health condition (9.7%) than adults without (7.4%) and highest among adults with SPD (13.4%). Similarly, the prevalence of current asthma is statistically higher for adults with a mental health condition (13.9%) than for adults without (7.1%) and highest among adults with SPD

Figure 5. Prevalence of cardiovascular disease, diabetes, asthma and arthritis by type of mental health conditions, HBRFSS 2007



(20.4%). In addition, the prevalence of arthritis is significantly higher for adults with a mental health condition (32.1%) than for adults without (22.9%) and highest among adults with SPD (40.4%).

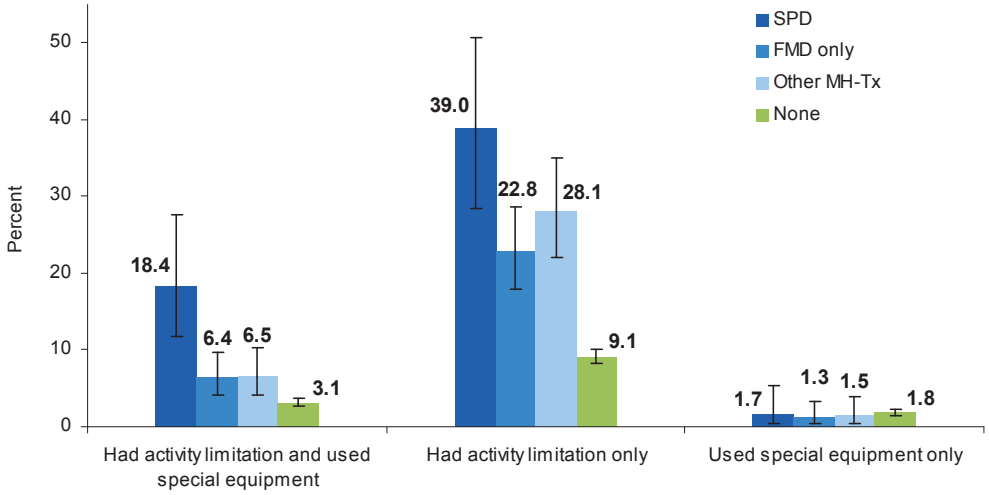
Mental health conditions can be physically debilitating or disabling. As presented earlier, the prevalence of chronic diseases is higher among adults with a mental health condition than among adults without. Thus, it is expected that adults with a mental health condition are likely to have some form of physical disability. The presence of disability is measured in the BRFSS 2007 by the questions:

"Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?" and
"Are you limited in any way in any activities because of physical, mental, or emotional problems?".

The two questions were combined to form a disability indicator. A positive response to either of the two questions indicates "disability" and a negative response to both questions indicate "not disable" or "no disability." Table 13 of Appendix A shows that the overall prevalence of disability (i.e., used special equipment or had activity limitation) is more than twice as common among adults with a mental health condition than among those without (37.0% vs. 14.0%). However, when adults with a mental health condition are

stratified into SPD, FMD and "Other MH-Tx", the percent of disabled among adults in the SPD group is a staggering 59.1% (see Table 13 of Appendix A). This same percentage is broken down in figure 6. Figure 6 shows the type of disability and mental health condition. The percent in the SPD group (18.4%) that reported limited activities and require special equipment is nearly three times that of FMD (6.4%) and that of "Other MH-Tx" (6.5%) and nearly six times that of adults without a mental health condition (3.1%). Similarly, adults with SPD have the highest proportion with activity limitation only (39.0%) as form of disability. This percentage is significantly higher than for adults with FMD only (22.8%) and adults without a mental health condition (9.1%).

Figure 6. Prevalence of disability by type of mental health conditions, HBRFSS 2007



Health related quality of life etc.

Mental health conditions or mental health problems affect the quality of life and vice versa. In this section the quality of life will be measured in terms of self-reported general health status of fair or poor and number of days in the past 30 days that physical health was not good or poor health either mental or physical prevents one from doing usual activities.

Table 10 shows the mean number of days in poor physical health and perceived general health (page 26). Adults with a mental health condition have more days of poor physical health than those without a mental health condition (6.5 days vs. 2.3 days). This is magnified even more for those with SPD who are also receiving treatment: more than 5 times higher than for those with any mental health condition (13.4 days vs. 2.3 days). In addition, nearly 65% of adults with SPD and receiving treatment reported their general health as fair/poor, the highest of any groups of adults. The pattern in Table 10 shows the mean number of days in poor physical health, and the prevalence of fair/poor health is the largest for SPD group and the smallest for the "Other MH-Tx" with the FMD only group somewhere in-between. This suggest that SPD is a more severe form of mental health condition than FMD, and treatment is likely helping "Other MH-Tx" (i.e., those receiving

treatment and not exhibiting the symptoms of SPD and FMD). This also validates the positive response of this group to the statement that "treatment can help people with mental illness lead normal lives" (see Table 8 with discussion).

Table 10. Mean number of days of poor physical health in the past 30 days, prevalence of poor or fair health status by mental health condition and medical treatment status, HBRFSS 2007

A. Mean number of days of poor physical health in past 30 days.

	Overall *days (95%CI*)*	**With mental health condition**	
		Receiving treatment *days (95% CI)*	**Not receiving treatment** *days (95% CI)*
State	2.9 (2.7 - 3.1)	6.4 (5.3 - 7.4)	6.4 (5.2 - 7.6)
Without mental health condition	2.3 (2.1 - 2.5)	–	–
With mental health condition	6.5 (5.7 - 7.3)	6.4 (5.3 - 7.4)	6.4 (5.2 - 7.6)
Type of mental health conditions			
SPD	10.3 (7.9 - 12.7)	13.4 (9.7 - 17.1)	8.9 (5.9- 11.9)
FMD only	6.7 (5.5 - 7.9)	9.4 (6.5-12.4)	5.8 (4.5 - 7.0)
Other MH-Tx	3.9 (3.0 - 4.9)	3.9 (3.0 - 4.9)	–

B. Prevalence of poor or fair health status.

	Overall *% (95%CI)*	**With mental health condition**	
		Receiving treatment *% (95% CI)*	**Not receiving treatment** *% (95% CI)*
State	14.7 (13.5 - 15.9)	33.1 (27.4 - 39.4)	29.3 (23.6 - 35.7)
Without mental health condition	12.1 (11.0 - 13.3)	–	–
With mental health condition	31.4 (27.3 - 35.9)	33.1 (27.4 - 39.4)	29.3 (23.6 - 35.7)
Type of mental health conditions			
SPD	49.6 (38.4 - 60.8)	64.8 (46.6 - 79.5)	41.7 (28.5 - 56.3)
FMD only	31.0 (25.2 - 37.4)	46.8 (33.4 - 60.7)	25.9 (19.9 - 33.0)
Other MH-Tx	21.5 (15.9 - 28.5)	21.5 (15.9 - 28.5)	–

*CI: confidence interval

Mean number of days kept from usual activities

The question *"During the past 30 days, for about how many days did a mental health condition or emotional problem keep you from doing your work or other usual activities?"* gives an indication of the severity of the mental health condition to the extent that it interferes or prevents the person from doing his or her usual activities. It may also provide a crude estimate of lost days or lost productivity due to a mental health condition. A highly correlated question is *"During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?"*

Panel A of Table 11 (page 27) shows the mean number of days respondents were kept from doing usual activities due to a mental health condition. The average number of days kept from doing usual activities for the entire state is less than a day (0.6 days). When broken down by mental health conditions, adults with SPD had the most number of days

(8.5 days) followed by those with FMD (3.0 days). Those with any other mental health condition(s) (i.e., Other MH-Tx) had only 1.0 day on average not able to do usual activities. Adults with no mental health condition are kept from doing usual activities only for a fraction of day (0.2 day). When those with a mental health condition are stratified into receiving medical treatment and not receiving medical treatment by type of mental health condition, those not receiving treatment with SPD or FMD have significantly fewer days of not being able to do usual activities (6.4 and 2.3 days respectively) than those receiving treatment (12.8 and 5.8 days respectively). These fewer days among adults not

Table 11. Mean number of days health condition prevents doing usual activities, HBRFSS 2007

A. Mean number of days mental health condition or emotional problem kept from doing usual activities.

	Overall *days (95%CI*)*	**With mental health condition**	
		Receiving treatment *days (95% CI)*	**Not receiving treatment** *days (95% CI)*
State	0.6 (0.5 - 0.7)	3.6 (2.7 - 4.6)	3.2 (2.4 - 4.0)
Without mental health condition	0.2 (0.1 - 0.2)	–	–
With mental health condition	3.4 (2.8 - 4.0)	3.6 (2.7 - 4.6)	3.2 (2.4 - 4.0)
Type of mental health conditions			
SPD	8.5 (6.4 -10.6)	12.8 (9.0 - 16.5)	6.4 (4.2 - 8.6)
FMD only	3.0 (2.2 - 3.9)	5.8 (3.3 - 8.3)	2.3 (1.5 - 3.1)
Other MH-Tx	1.0 (0.6 - 1.4)	1.0 (0.6 - 1.4)	–

B. Mean number of days poor physical or mental health kept from doing usual activities.

	Overall *days (95%CI)*	**With mental health condition**	
		Receiving treatment *days (95% CI)*	**Not receiving treatment** *days (95% CI)*
State	1.6 (1.4 - 1.8)	5.2 (4.2 - 6.3)	5.9 (4.7 - 7.0)
Without mental health condition	1.0 (0.9 - 1.1)	–	–
With mental health condition	5.6 (4.9 - 6.4)	5.2 (4.2 - 6.3)	5.9 (4.7 - 7.0)
Type of mental health conditions			
SPD	12.0 (9.4 - 14.6)	15.2 (11.5 - 19.0)	10.4 (7.1 - 13.7)
FMD only	5.4 (4.4 - 6.5)	7.9 (5.0 - 10.8)	4.6 (3.6 - 5.7)
Other MH-Tx	2.3 (1.5 - 3.0)	2.3 (1.5 - 3.0)	–

C. Ratio of mean number of days in panel A to mean number of days in panel B.

	Overall	**With mental health condition**	
		Receiving treatment	**Not receiving treatment**
State	37.5%	69.2%	54.2%
Without mental health condition	20.0%	–	–
With mental health condition	60.7%	69.2%	54.2%
Type of mental health conditions			
SPD	70.8%	84.2%	61.5%
FMD only	55.6%	73.4%	50.0%
Other MH-Tx	43.5%	43.5%	–

*CI: confidence interval

receiving treatment suggest that these adults' mental health condition may not be severe enough to warrant treatment or that they exhibited the FMD or SPD symptoms due to recent life events not necessarily attributable to diagnosable mental illness. This may also explain why a large proportion of the "not receiving treatment" group with a mental health condition is employed (see Table 4, page 14). As mentioned earlier, adults in the "Other MH-Tx" (receiving treatment for mental health condition and without SPD or FMD) were kept from their usual activities only for a mean average of one day. This group of adults has probably been on medical mental health treatment for quite sometime and thus did not exhibit the symptoms of FMD or SPD. The more than twice as many days not able to do usual activities among adults with SPD compared to adults with FMD validates that SPD is a more severe mental health state than FMD.Panel B of Table 11 shows the overall mean number of days kept from doing usual activities due to poor physical or mental health. The pattern is similar to that of panel A with adults that have SPD and receiving medical treatment exhibiting the most number of days (15.2) kept away from doing usual activities compared to other adults. The ratio of the mean number of days in panel A with that in panel B showed that almost all the days not able to do usual activities is attributed to mental health conditions (60.7%). This is even more pronounced for adults with SPD (70.8%) overall, and it is even higher for adults receiving treatment who also have SPD (84.2%) followed by adults with FMD and receiving treatment (73.4%).

Emotional support & life satisfaction

Emotional support is an important factor in an individual's overall quality of life especially when dealing with life challenges, including a mental illness. Unfortunately, the data showed that, compared to those without a mental health condition, a significantly larger percentage of adults with a mental health condition do not get emotional support when needed (8.5% vs. 16.1%). This is even more evident when adults with a mental health condition are stratified according to type of mental health conditions (i.e., SPD, FMD). As shown in Table 12 (page 29), adults with SPD are more than twice and nearly four times as likely to lack the emotional support needed compared to adults with FMD (32.1% vs. 14.2%) and individuals without mental health condition (32.1% vs. 8.5%). In comparing the prevalence of not receiving emotional support among adults with FMD with that of adults without mental health problems, the prevalence of FMD among adults is statistically significantly higher (14.2% vs. 8.5%).

Looking at self-perceived life satisfaction, only 1.7% of adults without a mental health condition reported being dissatisfied or very dissatisfied with their life. With poor socio-economic status, chronic health problems, disability and perceived lack of emotional support, it is not surprising that a high percentage (16.3%) of adults with a mental health condition is either dissatisfied or very dissatisfied with their life. Adults with SPD fare the worst with nearly 46% reporting being dissatisfied or very dissatisfied with their life. For those with SPD who are receiving treatment, the percentage is even higher with more than one in two persons (52.0%) dissatisfied or very dissatisfied with their life. Compared to those with SPD, adults with FMD are less likely to be dissatisfied or very dissatisfied with their life (45.7% vs. 12.1%). However, adults with FMD are more than seven times as

Table 12. Percent adults rarely or never receiving emotional support, dissatisfied or very dissatisfied with life by mental health condition and medical treatment status, HBRFSS 2007

A. Prevalence of rarely or never receiving emotional support

	Overall *% (95%CI*)*	With mental health condition	
		Receiving treatment *% (95% CI)*	Not receiving treatment *% (95% CI)*
State	9.5 (8.5-10.7)	12.6 (8.9 - 17.6)	19.0 (13.9 - 25.3)
Without mental health condition	8.5 (7.5 - 9.6)	–	–
With mental health condition	16.1 (12.8-20.1)	12.6 (8.9 - 17.6)	19.0 (13.9 - 25.3)
Type of mental health conditions			
SPD	32.1 (22.4-43.5)	34.9 (19.0 -55.1)	30.9 (19.6 - 45.0)
FMD only	14.2 (9.8 - 20.2)	7.8 (4.1- 14.4)	15.8 (10.5 - 23.1)
Other MH-Tx	10.1 (6.2- 16.2)	10.1 (6.2 - 16.2)	–

B. Prevalence of dissatisfied or very dissatisfied with life

	Overall *% (95%CI)*	With mental health condition	
		Receiving treatment *% (95% CI)*	Not receiving treatment *% (95% CI)*
State	3.7 (3.1 - 4.4)	14.6 (10.9-19.4)	17.7 (13.1- 23.4)
Without mental health condition	1.7 (1.3 - 2.3)	–	–
With mental health condition	16.3 (13.2-20.0)	14.6 (10.9-19.4)	17.7 (13.1- 23.4)
Type of mental health conditions			
SPD	45.7 (34.7-57.1)	52.0 (34.5-69.1)	42.2 (28.7- 56.9)
FMD only	12.1 (8.6 - 16.7)	15.8 (9.2 - 25.7)	11.1 (7.2 - 16.6)
Other MH-Tx	6.8 (3.9- 11.6)	6.8 (3.9-11.6)	–

*CI: confidence interval

likely to report being dissatisfied or very dissatisfied with their life compared to those without a mental health condition, (12.1% vs. 1.7% vs.). Adults with other mental health condition(s) are four times as likely to be dissatisfied or very dissatisfied with their life compared to those without a mental health condition(s) (6.8% vs. 1.7%). Clearly, a mental health condition does not impact only one aspect of life but tends to color all aspects of life negatively, which is why mental health detection and treatment is of crucial importance for improving overall quality of life.

CONCLUSIONS AND RECOMMENDATIONS

This is the third report on mental health utilizing the Hawaii Behavioral Risk Factor Surveillance System (BRFSS). This particular report is unique in that this is the first report to include serious psychological distress, stigma and receiving treatment. Additionally, we included data on the number of people reporting frequent mental distress.

Based on a 2007 BRFSS survey of 6,387 adults living in the state of Hawaii, we estimate that about 133,000 adults (or 13.9% of the adult population) have a mental health condition severe enough as to interfere with their daily activities (see Table 11). These individuals can be divided into three categories: (a) 22,000 with serious psychological distress (2.3%), (b) 73,000 with frequent mental distress (7.6%), and (c) 38,000 with other mental health conditions (4%).

Overall, there were no statistically significant differences in the prevalence of mental illness by counties but there were some significant differences in other domains. People with mental illnesses were more likely to be female than male, in a lower economic bracket, and more likely to be younger (on average, 2 years younger than the general population). However, those receiving treatment were more likely to be older (on average 10 years older than those not receiving treatment). There were also some significant differences in the accessibility to health care: The rate of health care coverage is about the same for adults with mental health conditions and adults without mental health condition (94%). However, adults with a mental health condition in spite of having health care coverage are more than three times likely not to afford to see a doctor when needed compared to those without a mental health condition.

The ethnic composition of the adult population with and without mental health condition shows that adults with mental illness are more likely to be in the "Other" ethnic group and Japanese are least likely to have mental illness while there were no significant differences for White, Hawaiian, Filipino and Chinese, (see Table 7). However, Hawaiian Filipinos and "Others" with a mental illness were twice less likely to receive treatment while White were more than twice as likely to receive treatment.
Based on those findings, we recommend that special attention be given to individuals in lower economic status and to ethnic groups that are less likely to come into contact with the health care system, including Hawaiians, Filipinos and other minorities (from the "Other" category). The need to reach out to these ethnic groups is further supported by the finding that Hawaiians, Filipinos, and "Others" are also less likely than Whites and Chinese to believe that treatment can help mentally ill individuals lead normal lives (see Table 8). While there may be valid reasons for believing that treatment may not lead to normal lives for everybody, this more negative attitude toward treatment is likely to be a barrier in seeking treatment.

The finding that adults with higher education tend to be more positive about the efficacy of treatment but less likely to agree with the statement that people are generally caring and sympathetic toward people with mental illness than adults with lower education needs to be investigated further to understand better the relationship between education and attitude.

The finding that individuals with mental illness who are not receiving treatment are younger than those receiving treatment suggests a need for early detection, and that may possibly influence a change towards a more positive attitude by this younger group on the efficacy of treatment (see Table 14). Finally, the association between physical health and mental health was once again evident in this 2007 survey. While our study cannot determine the direction of the association, other studies have shown that exercise and

proper nutrition are beneficial to both physical and mental health, thereby providing further support to initiatives that promote regular exercises with appropriate and balanced diet. Beyond this obvious recommendation, the link between physical health and mental health also calls for more integrated treatment. Mental health treatment is often provided in a silo with little contact, if any, with physical health physicians. The findings that individuals with mental illness are much more likely to also have physical problems including chronic diseases than individuals without mental illness suggest that individuals with mental illness would likely benefit from a more holistic treatment.

We hope that the above findings will help guide the planning and improvement of mental health services for all citizens in the state of Hawaii.

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APPENDIX A

Table 13. Prevalence of selected health indicators by mental health condition status and type of mental health conditions, HBRFSS 2007

Health indicators	Mental health condition status		Type of mental health conditions		
	Without *% (95% CI*)*	**With** *% (95% CI)*	**SPD** *% (95% CI)*	**FMD only** *% (95% CI)*	**Other MH-Tx** *% (95% CI)*
Smoking	15.7 (14.4-17.2)	25.0 (20.9-29.7)	33.3 (23.3-45.1)	26.6 (20.5-33.8)	17.0 (12.3 - 23.1)
Binge drinking	18.1 (16.5-19.7)	21.0 (17.2-25.4)	31.0 (21.3-42.7)	23.8 (18.0-30.6)	10.0 (6.6 - 15.0)
Heavy drinking	7.3 (6.3 - 8.3)	10.6 (7.7 - 14.5)	17.0 (9.7 - 28.0)	10.8 (6.6 - 17.1)	6.5 (3.6 -11.2)
No leisure time physical activity	16.9 (15.6 - 8.3)	25.5 (21.7-29.7)	44.2 (33.4-55.5)	21.6 (16.7-27.5)	21.8 (16.3 -28.5)
Obesity	20.4 (18.9-22.0)	30.2 (26.0-34.8)	44.6 (33.5-56.2)	26.6 (20.8 -33.3)	28.5 (22.4-35.4)
High blood pressure	28.1 (26.5-29.7)	33.0 (29.0-37.3)	35.2 (25.7-46.0)	31.3 (25.7 -37.4)	35.1 (28.6-42.2)
Cardiovascular disease	6.1 (5.4 - 7.0)	10.4 (8.1 - 13.1)	12.5 (7.3 - 20.6)	8.9 (6.0 -12.8)	12.0 (8.2 - 17.2)
Diabetes	7.4 (6.5 - 8.3)	9.7 (7.4 -12.5)	13.4 (7.8 - 22.2)	10.5 (7.3 - 15.0)	5.9 (3.7 - 9.4)
Current asthma	7.1 (6.1 - 8.2)	13.9 (10.9 -17.7)	20.4 (12.9-30.9)	12.6 (8.4 - 18.5)	12.8 (8.9 - 18.1)
Arthritis	22.9 (21.5- 24.4)	32.1 (28.2 -36.3)	40.4 (30.0-51.7)	26.5 (21.5-32.3)	37.6 (31.1-44.6)
Disability					
Had activity limitation and used special equipment	3.1 (2.6-3.7)	8.4 (6.5-10.9)	18.4 (11.7-27.7)	6.4 (4.2 - 9.6)	6.5 (4.0-10.2)
Had activity limitation only	9.1 (8.2-10.0)	27.1 (23.2-31.3)	39.0 (28.5-50.7)	22.8 (17.9-28.7)	28.1 (22.1-35.1)
Used special equipment only	1.8 (1.4 - 2.3)	1.4 (0.8 - 2.6)	1.7 (0.5 - 5.4)	1.3 (0.5 - 3.3)	1.5 (0.5 - 4.0)
No disability	86.0 (84.8-87.1)	63.0 (58.6-67.3)	40.9 (30.3 - 52.5)	69.5 (63.3 -75.1)	63.8 (56.7 -70.4)

*CI: confidence interval

APPENDIX B

Table 14. Treatment can help people with mental illness lead normal lives, HBRFSS 2007

Socio-economic indicators	Strongly agree *% (95%CI*)*	Slightly agree *% (95%CI)*	Neither agree nor disagree *% (95%CI)*	Slightly disagree *% (95%CI)*	Strongly disagree *% (95%CI)*	Unk/Ref *% (95%CI)*	Total *%*
Age groups							
18-24 years	41.8 (35.2 - 48.8)	43.3 (36.6 - 50.3)	–	10.1 (6.3- 15.7)	–	–	100
25-34 years	58.4 (53.6 - 63.0)	30.1 (25.9 - 34.7)	1.4 (0.7 - 3.1)	5.0 (3.2 - 7.6)	2.9 (1.7 - 4.8)	2.2 (1.2 - 3.8)	100
35-44 years	65.4 (61.6 - 69.0)	27.2 (23.8 - 30.8)	1.4 (0.8 - 2.4)	2.9 (1.9 - 4.5)	1.2 (0.5 - 2.8)	1.9 (1.2 - 3.0)	100
45-54 years	68.2 (65.0 - 71.3)	22.1 (19.5 - 25.0)	1.7 (1.0 - 2.8)	3.1 (2.2 - 4.5)	1.9 (1.1 - 3.3)	2.8 (2.0 - 4.1)	100
55-64 years	67.5 (64.0 - 70.9)	23.8 (20.8 - 27.20	1.9 (1.0 - 3.4)	3.0 (2.0 - 4.5)	2.2 (1.2 - 3.9)	1.6 (1.0 - 2.5)	100
>=65 years	60.9 (57.6 - 64.1)	20.9 (18.3 - 23.8)	2.4 (1.6 - 3.4)	4.4 (3.0 - 6.4)	2.5 (1.6 - 3.9)	8.9 (7.2- 10.9)	100
Education level completed							
Less than 12 grade	49.5 (42.0 - 57.0)	23.5 (18.0 - 30.0)	2.7 (1.1 - 6.4)	8.9 (4.9 - 15.7)	3.2 (1.6 - 6.3)	12.3 (8.5-17.4)	100
Grade 12 or GED	50.6 (47.2 - 54.0)	33.9 (30.7 - 37.3)	1.5 (1.0 - 2.2)	6.2 (4.7 - 8.1)	3.7 (2.5 - 5.3)	4.1 (3.1 - 5.4)	100
College 1 -3 years	62.1 (58.8 - 65.3)	27.6 (24.8 - 30.7)	1.8 (1.2 - 2.8)	4.7 (3.2 - 6.9)	1.4 (0.8 - 2.4)	2.3 (1.6 - 3.4)	100
College >=4 years	72.4 (69.9 - 74.7)	21.0 (18.9 - 23.2)	1.4 (0.9 - 2.3)	2.0 (1.4 - 2.8)	1.2 (0.7 - 1.9)	2.1 (1.5 - 2.9)	100
Employment status							
Employed	61.9 (59.7 - 64.1)	28.4 (26.4 - 30.5)	1.6 (1.1 - 2.2)	3.7 (2.9 - 4.6)	2.1 (1.5 - 3.0)	2.4 (1.8 - 3.2)	100
Homemaker	69.8 (63.2 - 75.7)	21.4 (16.4 - 27.5)	1.5 (0.6 - 3.7)	4.0 (1.7 - 8.8)	2.0 (0.8 - 4.8)	1.2 (0.6 - 2.6)	100
Student	50.7 (39.6 - 61.8)	36.4 (26.8 - 47.2)	–	12.9 (5.7- 26.5)	–	–	100
Retired	62.5 (59.3 - 65.5)	21.3 (18.8 - 24.1)	2.0 (1.3 - 2.9)	4.1 (2.9 - 5.9)	2.0 (1.3 - 3.1)	8.1 (6.6 - 10.0)	100
Out of work	56.9 (45.4 - 67.8)	26.6 (17.3 - 38.5)	3.5 (1.1 - 10.4)	7.4 (3.6 - 14.6)	3.9 (1.3 -10.5)	1.8 (0.6 - 5.4)	100
Unable to work	45.5 (36.2 - 55.1)	35.2 (26.0 - 45.7)	1.6 (0.6 - 4.3)	10.7 (4.9- 21.6)	4.9 (1.9 -11.6)	2.2 (0.9 - 5.1)	100
Annual household income							
< $15,000	50.5 (43.4 - 57.6)	26.9 (20.7 - 34.2)	2.7 (1.2 - 5.8)	8.6 (5.2 - 14.0)	2.8 (1.5 - 5.2)	8.5 (5.4 - 13.1)	100
$15,000 - $24,999	52.8 (47.7 - 57.8)	29.1 (24.7 - 34.0)	1.7 (0.9 - 3.0)	5.5 (3.6 - 8.2)	4.6 (2.7 - 7.7)	6.3 (4.0 - 9.8)	100
$25,000 - $34,999	56.7 (51.6 - 61.7)	30.1 (25.5 - 35.2)	2.5 (1.4 - 4.5)	5.2 (3.3 - 8.0)	1.3 (0.5 - 3.1)	4.1 (2.8 - 6.1)	100
$35,000 - $49,999	63.0 (58.7 - 67.0)	23.9 (20.6 - 27.5)	1.9 (1.1 - 3.2)	5.9 (3.6 - 9.5)	1.9 (1.1 - 3.2)	3.5 (2.3 - 5.2)	100
$50,000 - $74,999	65.3 (61.2 - 69.2)	28.3 (24.5 - 32.4)	0.9 (0.4 - 1.9)	2.5 (1.6 - 4.0)	1.6 (0.8 - 3.2)	1.4 (0.8 - 2.3)	100
$75,000 or more	69.4 (66.4 - 72.3)	24.2 (21.5 - 27.1)	1.0 (0.6 - 1.8)	2.8 (1.8 - 4.1)	1.0 (0.5 - 2.0)	1.6 (1.1 - 2.3)	100
Unk/Ref	41.3 (32.7 - 50.6)	40.3 (31.3 - 50.0)	1.6 (0.4 - 5.3)	7.9 (3.6 - 16.6)	5.5 (2.3 -12.4)	3.4 (1.9 - 6.0)	100
Marital status							
Married	65.4 (63.4 - 67.3)	24.6 (22.8 - 26.5)	1.6 (1.2 - 2.2)	3.4 (2.7 - 4.4)	2.1 (1.6 - 2.9)	2.8 (2.3 - 3.5)	100
Unmarried couple	61.4 (50.6 - 71.3)	30.9 (21.7 - 41.9)	1.3 (0.3 - 4.8)	4.4 (2.0 - 9.2)	–	2.0 (0.6 - 6.6)	100
Divorced or Separated	64.5 (59.6 - 69.0)	24.5 (20.3 - 29.2)	1.7 (1.0 - 3.1)	3.1 (1.8 - 5.2)	2.3 (1.2 - 4.1)	4.0 (2.6 - 6.0)	100
Widowed	57.4 (52.0 - 62.6)	20.3 (16.5 - 24.8)	1.8 (0.9 - 3.4)	6.0 (3.7 - 9.5)	2.1 (0.8 - 5.4)	12.5 (9.1-16.8)	100
Never married	50.6 (46.1 - 55.2)	35.7 (31.4 - 40.3)	1.6 (0.9 - 2.8)	7.3 (5.1 - 10.6)	2.4 (1.3 - 4.4)	2.3 (1.3 - 4.1)	100
County							
Honolulu	61.9 (59.6 - 64.1)	27.0 (24.9 - 29.1)	1.6 (1.2 - 2.2)	4.5 (3.5 - 5.7)	2.1 (1.5 - 2.9)	2.9 (2.3 - 3.7)	100
Hawaii	59.1 (55.9 - 62.2)	29.4 (26.5 - 32.5)	1.5 (0.8 - 2.9)	3.2 (2.4 - 4.4)	2.4 (1.4 - 4.0)	4.3 (3.3 - 5.7)	100
Kauai	62.3 (57.2 - 67.2)	25.3 (21.0 - 30.1)	1.1 (0.5 - 2.1)	4.9 (2.9 - 8.3)	2.8 (1.1 - 6.7)	3.5 (2.2 - 5.6)	100
Maui	59.4 (55.5 - 63.1)	25.9 (22.7 - 29.4)	2.0 (1.3 - 3.1)	6.0 (3.8 - 9.2)	1.9 (1.1 - 3.4)	4.8 (3.5 - 6.6)	100

*CI: confidence interval

APPENDIX C

Table 15. People are generally caring and sympathetic to people with mental illness, HBRFSS 2007

Socio-economic indicators	Strongly agree *% (95%CI*)*	Slightly agree *% (95%CI)*	Neither agree nor disagree *% (95%CI)*	Slightly disagree *% (95%CI)*	Strongly disagree *% (95%CI)*	Unk/Ref *% (95%CI)*	Total *%*
Age groups							
18-24 years	31.1 (25.1 - 37.9)	37.1 (30.6 - 44.0)	1.2 (0.4 - 3.4)	21.3 (16.0 - 27.8)	8.9 (5.7 - 13.8)	–	100
25-34 years	24.0 (19.9 - 28.5)	37.6 (33.0 - 42.3)	1.8 (0.9 - 3.5)	23.5 (19.7 - 27.7)	11.1 (8.5 - 14.4)	2.1 (0.9 - 5.0)	100
35-44 years	28.7 (25.3 - 32.4)	34.0 (30.4 - 37.7)	2.7 (1.6 - 4.5)	21.9 (18.9 - 25.1)	11.3 (8.7 - 14.5)	1.4 (0.8 - 2.4)	100
45-54 years	28.5 (25.5 - 31.7)	31.2 (28.1 - 34.4)	2.2 (1.4 - 3.5)	22.7 (20.1 - 25.6)	13.2 (11.0-15.7)	2.2 (1.5 - 3.3)	100
55-64 years	30.2 (26.8 - 33.8)	32.7 (29.4 - 36.3)	2.3 (1.6 - 3.4)	21.0 (18.3 - 23.9)	10.5 (8.5 - 12.8)	3.2 (2.2 - 4.8)	100
>=65 years	36.2 (33.0 - 39.4)	29.6 (26.7 - 32.7)	4.1 (2.9 - 5.7)	14.2 (12.1 - 16.6)	6.6 (5.3 - 8.3)	9.3 (7.5 - 11.6)	100
Education level completed							
Less than 12 grade	44.0 (36.6 - 51.6)	25.2 (19.4 - 32.0)	3.1 (1.4 - 6.8)	8.2 (5.0 - 13.2)	7.5 (4.7 - 11.8)	12.0 (7.9- 18.0)	100
Grade 12 or GED	33.5 (30.4 - 36.8)	32.0 (28.9 - 35.2)	2.5 (1.7 - 3.7)	17.8 (15.4 - 20.5)	10.2 (8.2 - 12.6)	4.0 (2.9 - 5.4)	100
College 1 -3 years	29.7 (26.9 - 32.8)	34.4 (31.3 - 37.5)	2.5 (1.7 - 3.6)	20.8 (18.3 - 23.6)	10.0 (8.3 - 12.0)	2.6 (1.8 - 3.7)	100
College >=4 years	24.1 (21.9 - 26.6)	35.4 (32.9 - 38.0)	2.4 (1.8 - 3.2)	25.1 (22.9 - 27.6)	11.2 (9.6 - 13.1)	1.7 (1.2 - 2.4)	100
Employment status							
Employed	29.4 (27.3 - 31.4)	34.6 (32.6 - 36.8)	1.9 (1.5 - 2.5)	21.4 (19.6 - 23.2)	10.6 (9.4 - 12.1)	2.0 (1.5 - 2.7)	100
Homemaker	25.0 (19.5 - 31.5)	31.7 (25.8 - 38.2)	1.4 (0.6 - 3.3)	28.7 (22.6 - 35.7)	10.0 (6.4 - 15.4)	3.1 (1.5 - 6.6)	100
Student	23.4 (15.5 - 33.6)	36.0 (26.2 - 47.2)	–	27.0 (17.8 - 38.7)	13.1 (6.9 - 23.7)	–	100
Retired	35.0 (32.0 - 38.1)	30.3 (27.4 - 33.3)	3.8 (2.8 - 5.3)	15.7 (13.6 - 18.1)	7.0 (5.6 - 8.8)	8.2 (6.5 -10.3)	100
Out of work	32.0 (21.7 - 44.4)	34.5 (24.5 - 46.1)	6.7 (2.4 - 17.4)	18.5 (12.2 - 27.0)	7.1 (3.7 - 13.4)	1.1 (0.4 - 3.2)	100
Unable to work	21.2 (13.3 - 31.9)	27.1 (19.3 - 36.7)	5.1 (2.4 - 10.6)	19.1 (13.1 - 27.0)	24.3 (17.2- 33.3)	3.3 (1.0 -10.0)	100
Annual household income							
< $15,000	33.3 (26.6 - 40.6)	26.1 (20.5 - 32.5)	4.3 (2.0 - 8.9)	14.1 (10.3 - 19.2)	15.9 (11.0- 22.3)	6.4 (3.9 - 10.2)	100
$15,000 - $24,999	32.7 (28.1 - 37.6)	29.7 (25.2 - 34.6)	3.5 (2.2 - 5.5)	16.2 (13.1 - 20.0)	13.7 (10.4- 17.9)	4.3 (2.8 - 6.5)	100
$25,000 - $34,999	33.1 (28.6 - 37.9)	30.5 (26.0 - 35.3)	3.8 (2.1 - 6.6)	19.9 (15.9 - 24.6)	8.7 (6.2 - 12.1)	4.1 (2.3 - 7.1)	100
$35,000 - $49,999	29.6 (25.9 - 33.6)	30.7 (26.9 - 34.7)	2.0 (1.3 - 3.0)	24.9 (21.1 - 29.2)	9.6 (7.4 - 12.3)	3.3 (2.1 - 5.1)	100
$50,000 - $74,999	29.2 (25.5 - 33.3)	37.4 (33.5 - 41.5)	1.4 (0.8 - 2.3)	20.9 (17.8 - 24.2)	9.6 (7.5 - 12.1)	1.5 (0.8 - 2.9)	100
$75,000 or more	25.4 (22.9 - 28.2)	38.3 (35.3 - 41.4)	1.8 (1.2 - 2.6)	22.4 (20.0 - 25.0)	10.4 (8.6 - 12.5)	1.7 (1.2 - 2.5)	100
Unk/Ref	40.1 (31.1 - 49.9)	28.0 (20.6 - 36.8)	3.1 (1.2 - 8.0)	15.0 (9.8 - 22.2)	7.2 (3.3 - 15.0)	6.5 (3.6-11.6)	100
Marital status							
Married	29.8 (27.9 - 31.8)	34.5 (32.6 - 36.6)	2.3 (1.8 - 2.9)	20.8 (19.2 - 22.5)	9.8 (8.6 - 11.2)	2.8 (2.2 - 3.5)	100
Unmarried couple	25.9 (16.7 - 37.9)	28.4 (20.3 - 38.1)	3.1 (1.0 - 8.6)	19.0 (12.6 - 27.5)	19.5 (12.5- 29.3)	4.1 (0.7- 22.0)	100
Divorced or Separated	26.1 (22.3 - 30.3)	27.4 (23.4 - 31.8)	4.1 (2.5 - 6.8)	23.4 (19.3 - 28.0)	15.4 (12.2- 19.3)	3.5 (2.0 - 6.2)	100
Widowed	39.3 (34.2 - 44.7)	26.0 (21.8 - 30.7)	1.5 (0.7 - 3.3)	15.4 (12.3 - 19.2)	5.3 (3.7 - 7.5)	12.4 (9.1 - 16.7)	100
Never married	29.2 (25.2 - 33.5)	35.4 (31.1 - 39.8)	2.5 (1.5 - 4.2)	21.0 (17.5 - 25.0)	10.0 (7.6 - 13.0)	2.0 (1.2 - 3.3)	100
County							
Honolulu	29.8 (27.8 - 32.0)	33.6 (31.4 - 35.7)	2.4 (1.9 - 3.2)	20.8 (19.0 - 22.7)	10.1 (8.8 - 11.6)	3.2 (2.5 - 4.1)	100
Hawaii	28.7 (25.9 - 31.7)	33.0 (30.0 - 36.1)	2.7 (1.9 - 3.7)	19.8 (17.5 - 22.4)	12.3 (10.3- 14.5)	3.5 (2.6 - 4.8)	100
Kauai	27.7 (23.5 - 32.3)	35.8 (31.1 - 40.9)	2.0 (1.1 - 3.4)	20.7 (17.2 - 24.7)	9.3 (6.6 - 12.9)	4.5 (2.8 - 7.2)	100
Maui	31.9 (28.6 - 35.4)	32.1 (28.8 - 35.7)	2.8 (1.8 - 4.30	20.7 (17.8 - 24.1)	9.7 (7.8 - 12.0)	2.7 (1.8 - 3.9)	100

*CI: confidence interval

APPENDIX D

Table 16. Percent distribution of marital status by mental health conditions, HBRFSS 2007

Marital Status	Overall *% (95%CI*)*	Mental health condition status		Type of mental health conditions		
		Without *% (95% CI)*	With *% (95% CI)*	SPD *% (95% CI)*	FMD only *% (95% CI)*	Other MH-Tx *% (95% CI)*
Married	59.5 (57.7-61.2)	60.6 (58.7-62.5)	52.0 (47.3-56.7)	46.5 (35.4- 57.9)	48.7 (42.0-55.5)	61.6 (54.5-68.1)
Unmarried couple	2.7 (2.2 - 3.4)	2.6 (2.1 - 3.4)	3.2 (2.0 - 5.1)	5.3 (2.1- 13.2)	2.9 (1.5 - 5.7)	2.6 (1.3 - 5.1)
Divorced or separated	8.5 (7.7 - 9.3)	8.1 (7.3 - 9.0)	11.1 (8.9 - 13.7)	11.1 (7.1 - 17.0)	10.8 (7.7 - 15.0)	11.7 (8.4 - 16.1)
Widowed	5.9 (5.3 - 6.6)	5.8 (5.2 - 6.5)	6.6 (5.0 - 8.8)	3.5 (1.7 - 7.1)	5.1 (3.3 - 7.9)	11.4 (7.6 - 16.7)
Never married	23.3 (21.6-25.1)	22.7 (20.9-24.6)	27.0 (22.4-32.0)	33.6 (23.5-45.4)	32.4 (25.5- 40.0)	12.8 (8.7 - 18.4)
Refused	0.1 (0.1 - 0.2)	0.1 (0.1 - 0.3)	0.0 (0.0 - 0.3)	–	0.1 (0.0 - 0.5)	–
Total%	100	100	100	100	100	100

*CI: confidence interval

APPENDIX E

Table 17. Mental health condition status and treatment status by age, gender, and ethnicity, HBRFSS 2007

	Mental health condition status			With mental health condition		
	Without *% (95% CI*)*	With *% (95% CI)*	Total *%*	Receiving treatment *% (95% CI)*	Not receiving treatment *% (95% CI)*	Total *%*
Gender						
Male	88.1 (86.2 - 89.7)	11.9 (10.3 - 13.8)	100	39.9 (32.8 - 47.5)	60.1 (52.5 - 67.2)	100
Female	85.1 (83.5 - 86.6)	14.9 (13.4 - 16.5)	100	50.6 (44.9 - 56.3)	49.4 (43.7 - 55.1)	100
State overall	86.5 (85.3 - 87.7)	13.5 (12.3 - 14.7)	100	45.9 (41.3 - 50.5)	54.1 (49.5 - 58.7)	100
Age groups						
18-24 years	84.8 (79.1 - 89.1)	15.2 (10.9 - 20.9)	100	21.9 (11.2 - 38.4)	78.1 (61.6 - 88.8)	100
25-34 years	86.0 (82.5 - 88.9)	14.0 (11.1 - 17.5)	100	28.2 (19.2 - 39.3)	71.8 (60.7 - 80.8)	100
35-44 years	87.7 (85.1 - 89.9)	12.3 (10.1 - 14.9)	100	46.3 (36.2 - 56.8)	53.7 (43.2 - 63.8)	100
45-54 years	84.8 (82.1 - 87.1)	15.2 (12.9 - 17.9)	100	51.8 (42.8 - 60.6)	48.2 (39.4 - 57.2)	100
55-64 years	85.7 (83.0 - 87.9)	14.3 (12.1 - 17.0)	100	58.0 (48.4 - 67.0)	42.0 (33.0 - 51.6)	100
>=65 years	89.8 (87.7 - 91.6)	10.2 (8.4 - 12.3)	100	68.5 (58.6 - 77.0)	31.5 (23.0 - 41.4)	100
Ethnic groups						
White	85.2 (83.3 - 87.0)	14.8 (13.0 -16.7)	100	64.2 (57.4 - 70.6)	35.8 (29.4 - 42.6)	100
Hawaiian	85.9 (82.6 - 88.8)	14.1 (11.2 -17.4)	100	29.0 (20.3 - 39.6)	71.0 (60.4 - 79.7)	100
Chinese	89.6 (81.9 - 94.3)	10.4 (5.7 - 18.1)	100	42.3 (18.6 - 70.3)	57.7 (29.7 - 81.4)	100
Filipino	87.3 (83.6 - 90.2)	12.7 (9.8 - 16.4)	100	29.1 (19.1 - 41.6)	70.9 (58.4 - 80.9)	100
Japanese	89.8 (87.6 - 91.6)	10.2 (8.4 - 12.4)	100	52.5 (42.2 - 62.6)	47.5 (37.4 - 57.8)	100
Others	80.8 (75.4 - 85.2)	19.2 (14.8-24.6)	100	30.9 (19.6 - 45.0)	69.1 (55.0 - 80.4)	100

*CI: confidence interval

APPENDIX F

2007 Hawaii BRFSS survey questions relevant to the analysis:

Section 1: Health Status

1.1 Would you say that in general your health is—
Please read:

1 Excellent
2 Very good
3 Good
4 Fair

Or

5 Poor

Do not read:

7 Don't know / Not sure
9 Refused

Section 2: Healthy Days — Health-Related Quality of Life

2.1 Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

_ _ Number of days
8 8 None
7 7 Don't know / Not sure
9 9 Refused

2.2 Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

_ _ Number of days
8 8 None **[If Q2.1 and Q2.2 = 88 (None), go to next section]**
7 7 Don't know / Not sure
9 9 Refused

2.3 During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

_ _ Number of days
8 8 None
7 7 Don't know / Not sure

9 9 Refused

Section 3: Health Care Access

3.1 Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

3.2 Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Section 4: Exercise

4.1 During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Section 5: Diabetes

5.1 Have you ever been told by a doctor that you have diabetes?

If "Yes" and respondent is female, ask: "Was this only when you were pregnant?"

If respondent says pre-diabetes or borderline diabetes, use response code 4.

1 Yes
2 Yes, but female told only during pregnancy
3 No
4 No, pre-diabetes or borderline diabetes
7 Don't know / Not sure
9 Refused

Section 6: Hypertension Awareness

6.1 Have you EVER been told by a doctor, nurse, or other health professional that you have high blood pressure?

Section 8: Cardiovascular Disease Prevalence

Now I would like to ask you some questions about cardiovascular disease.

Has a doctor, nurse, or other health professional EVER told you that you had any of the following? For each, tell me "Yes", "No", or you're "Not sure."

8.1 (Ever told) you had a heart attack, also called a myocardial infarction?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

8.2 (Ever told) you had angina or coronary heart disease?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

8.3 (Ever told) you had a stroke?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Section 9: Asthma

9.1 Have you ever been told by a doctor, nurse, or other health professional that you had asthma?

1 Yes
2 No **[Go to next section]**
7 Don't know / Not sure **[Go to next section]**
9 Refused **[Go to next section]**

9.2 Do you still have asthma?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Section 11: Tobacco Use

11.1 Have you smoked at least 100 cigarettes in your entire life?

NOTE: 5 packs = 100 cigarettes

1	Yes	
2	No	**[Go to next section]**
7	Don't know / Not sure	**[Go to next section]**
9	Refused	**[Go to next section]**

11.2 Do you now smoke cigarettes every day, some days, or not at all?

1	Every day	
2	Some days	
3	Not at all	**[Go to next section]**
7	Don't know/Not sure	**[Go to next section]**
9	Refused	**[Go to next section]**

Section 12: Demographics

12.1 What is your age?

_ _	Code age in years
0 7	Don't know / Not sure
0 9	Refused

12.2 Are you…?

Please read:

1	Married
2	Divorced
3	Widowed
4	Separated
5	Never married

Or

6	A member of an unmarried couple

Do not read:

9	Refused

12.3 What is the highest grade or year of school you completed?

Read only if necessary:

1 Never attended school or only attended kindergarten
2 Grades 1 through 8 (Elementary)
3 Grades 9 through 11 (Some high school)
4 Grade 12 or GED (High school graduate)
5 College 1 year to 3 years (Some college or technical school)
6 College 4 years or more (College graduate)

Do not read:

9 Refused

12.4 Are you currently…?

Please read:

1 Employed for wages
2 Self-employed
3 Out of work for more than 1 year
4 Out of work for less than 1 year
5 A Homemaker
6 A Student
7 Retired

Or

8 Unable to work

Do not read:

9 Refused

12.5 Is your annual household income from all sources—

If respondent refuses at ANY income level, code '99' (Refused)

Read only if necessary:

0 4 Less than $25,000 **If "no," ask 05; if "yes," ask 03**
($20,000 to less than $25,000)

0 3 Less than $20,000 **If "no," code 04; if "yes," ask 02**
($15,000 to less than $20,000)

0 2 Less than $15,000 **If "no," code 03; if "yes," ask 01**
($10,000 to less than $15,000)

0 1 Less than $10,000 **If "no," code 02**

0 5 Less than $35,000 **If "no," ask 06**
($25,000 to less than $35,000)

0 6 Less than $50,000 **If "no," ask 07**
($35,000 to less than $50,000)

0 7 Less than $75,000 **If "no," code 08**
($50,000 to less than $75,000)

0 8 $75,000 or more

Do not read:

7 7 Don't know / Not sure
9 9 Refused

12.6 About how much do you weigh without shoes?

Note: If respondent answers in metrics, put "9" in column 122.

Round fractions up

_ _ _ _ Weight
(pounds/kilograms)
7 7 7 7 Don't know / Not sure **(go to 12.15)**
9 9 9 9 Refused

12.7 About how tall are you without shoes?

Note: If respondent answers in metrics, put "9" in column 126.

Round fractions down

_ _ / _ _ Height
(f t / inches/meters/centimeters)
7 7 7 7 Don't know / Not sure
9 9 9 9 Refused

12.8 What county do you live in?

_ _ _ FIPS county code
7 7 7 Don't know / Not sure
9 9 9 Refused

12.9 **Indicate sex of respondent. Ask only if necessary.**

1 Male **[Go to next section]**
2 Female **[If respondent is 45 years old or older, go to next section]**

Section 13: Alcohol Consumption

13.1 During the past 30 days, have you had at least one drink of any alcoholic beverage such as beer, wine, a malt beverage or liquor?

1 Yes

2 No **[Go to next section]**
7 Don't know / Not sure **[Go to next section]**
9 Refused **[Go to next section]**

13.2 During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage?

1_ _ _ Days per week
2_ _ _ Days in past 30 days
8 8 8 No drinks in past 30 days **[Go to next section]**
7 7 7 Don't know / Not sure
9 9 9 Refused

13.3 One drink is equivalent to a 12-ounce beer, a 5-ounce glass of wine, or a drink with one shot of liquor. During the past 30 days, on the days when you drank, about how many drinks did you drink on the average?

_ _ Number of drinks
7 7 Don't know / Not sure
9 9 Refused

13.4 Considering all types of alcoholic beverages, how many times during the past 30 days did you have **X [CATI X = 5 for men, X = 4 for women]** or more drinks on an occasion?

_ _ Number of times
8 8 None
7 7 Don't know / Not sure
9 9 Refused

13.5 During the past 30 days, what is the largest number of drinks you had on any occasion?

_ _ Number of drinks
7 7 Don't know / Not sure
9 9 Refused

Section 14: Disability

The following questions are about health problems or impairments you may have.

14.1 Are you limited in any way in any activities because of physical, mental, or emotional problems?

1 Yes
2 No
7 Don't know / Not Sure
9 Refused

14.2 Do you now have any health problem that requires you to use special equipment, such as a cane, a wheelchair, a special bed, or a special telephone?

Include occasional use or use in certain circumstances.

1 Yes
2 No
7 Don't know / Not Sure
9 Refused

Section 15: Arthritis Burden

15.1 Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

INTERVIEWER NOTE: Arthritis diagnoses include:

- rheumatism, polymyalgia rheumatica
- osteoarthritis (not osteoporosis)
- tendonitis, bursitis, bunion, tennis elbow
- carpal tunnel syndrome, tarsal tunnel syndrome
- joint infection, Reiter's syndrome
- ankylosing spondylitis; spondylosis
- rotator cuff syndrome
- connective tissue disease, scleroderma, polymyositis, Raynaud's syndrome
- vasculitis (giant cell arteritis, Henoch-Schonlein purpura, Wegener's granulomatosis, polyarteritis nodosa)

Section 19: Emotional Support and Life Satisfaction

The next two questions are about emotional support and your satisfaction with life.

19.1 How often do you get the social and emotional support you need?

INTERVIEWER NOTE: If asked, say "please include support from <u>any</u> source".

Please read:

1 Always
2 Usually
3 Sometimes
4 Rarely
5 Never

Do not read:

7 Don't know / Not sure
9 Refused

19.2 In general, how satisfied are you with your life?

Please read:

1 Very satisfied
2 Satisfied
3 Dissatisfied
4 Very dissatisfied

Do not read:

7 Don't know / Not sure
9 Refused

Optional Module: Mental Illness and Stigma

Now, I am going to ask you some questions about how you have been feeling during the **past 30 days**. ..

1. About how often during the past 30 days did you feel **nervous** — would you say **all** of the time, **most** of the time, **some** of the time, **a little** of the time, or **none** of the time?

(358)

1 All
2 Most
3 Some
4 A little
5 None
7 Don’t know / Not sure
9 Refused

2. During the past 30 days, about how often did you feel **hopeless** — **all** of the time, **most** of the time, **some** of the time, **a little** of the time, or **none** of the time?

(359)

1 All
2 Most
3 Some
4 A little
5 None
7 Don’t know / Not sure
9 Refused

3. During the past 30 days, about how often did you feel **restless** or **fidgety**?

[If necessary: all, most, some, a little, or none of the time?]

(360)

1 All
2 Most
3 Some
4 A little
5 None
7 Don't know / Not sure
9 Refused

4. During the past 30 days**,** about how often did you feel **so depressed** that nothing could cheer you up?

[If necessary: all, most, some, a little, or none of the time?]

(361)

1 All
2 Most
3 Some
4 A little
5 None
7 Don't know / Not sure
9 Refused

5. During the past 30 days, about how often did you feel that **everything was an effort**?

[If necessary: all, most, some, a little, or none of the time?]

(362)

1 All
2 Most
3 Some
4 A little
5 None
7 Don't know / Not sure
9 Refused

6. During the past 30 days, about how often did you feel **worthless**?

[If necessary: all, most, some, a little, or none of the time?]

(363)

1 All
2 Most
3 Some
4 A little
5 None
7 Don't know / Not sure
9 Refused

The next question asks if any type of mental health condition or emotional problem has recently kept you from doing your work or other usual activities.

7. During the past 30 days, for about how many days did a mental health condition or emotional problem keep you from doing your work or other usual activities?

(364-365)

_ _	Number of days
8 8	None
7 7	Don't know / Not sure
9 9	Refused

INTERVIEWER NOTE: If asked, **"usual activities"** includes housework, self-care, caregiving, volunteer work, attending school, studies, or recreation.

8. Are you now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem?

(366)

1	Yes
2	No
7	Don't know / Not sure
9	Refused

These next questions ask about peoples' attitudes toward mental illness and its treatment. How much do you **agree** or **disagree** with these statements about people with mental illness...

9. Treatment can help people with mental illness lead normal lives. Do you –**agree** slightly or strongly, or **disagree** slightly or strongly?

(367)

Read only if necessary:

1	Agree strongly
2	Agree slightly
3	Neither agree nor disagree
4	Disagree slightly
5	Disagree strongly

Do not read:

7	Don't know / Not sure
9	Refused

10. People are generally caring and sympathetic to people with mental illness. Do you **agree** slightly or strongly, or **disagree** slightly or strongly?

Read only if necessary:

1	Agree strongly
2	Agree slightly
3	Neither agree nor disagree
4	Disagree slightly
5	Disagree strongly

Do not read:

7 Don't know / Not sure
9 Refuse

SAQ3. What island do you live on?

1 Oahu
2 Hawaii
3 Kauai
4 Maui
5 Molokai
6 Lanai

SAQ4. Which one or more of the following would you say is your ethnicity?
(Allow up to 6 choices meaning 12 columns)

1 Caucasian (includes European, German, Irish, Italian, English)
2 Hawaiian
3 Chinese
4 Filipino
5 Japanese
6 Korean
7 Samoan
8 Black
9 American Indian/ Alaska Native/ Eskimo/ Inuit
10 Vietnamese
11 Asian Indian
12 Portuguese
13 Guamanian/Chamorro
14 Puerto Rican
15 Mexican
16 Tongan
17 Laotian
18 Cambodian
19 Malaysian
20 Fijian
21 Micronesian
22 Other Asian (specify)
23 Other (specify)

Do not read

24 Don't know/ Not sure

25 Refuse

26 No additional choices

SAQ5. Which one of these groups would you say best represents your ethnicity?

1 Caucasian (includes European, German, Irish, Italian, English)
2 Hawaiian
3 Chinese
4 Filipino

5 Japanese
6 Korean
7 Samoan
8 Black
9 American Indian/ Alaska Native/ Eskimo/ Inuit
10 Vietnamese
11 Asian Indian
12 Portuguese
13 Guamanian/Chamorro
14 Puerto Rican
15 Mexican
16 Tongan
17 Laotian
18 Cambodian
19 Malaysian
20 Fijian
21 Micronesian
22 Other Asian (specify)
23 Other (specify)

Do not read

24 Don't know/ Not sure

25 Refuse

26 No additional choices

Hawaii BRFSS 2007 Mental Health and Stigma Report

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