Measuring Mental Health in California's Counties:

What Can We Learn?

University of California, Berkeley
School of Public Health

Measuring Mental Health in California's Counties: What Can We Learn?

Daniel Eisenberg, PhD – Assistant Professor, University of Michigan at Ann Arbor; Former National Institute of Mental Health Postdoctoral Trainee and The Nicholas C. Petris Center Research Associate

Nicole Bellows, MHSA – University of California, Berkeley Doctoral Student; The Nicholas C. Petris Center Research Associate

Timothy T. Brown, PhD – Associate Director of Research, The Nicholas C. Petris Center*

Richard M. Scheffler, PhD – Director, The Nicholas C. Petris Center; Distinguished Professor of Health Economics and Public Policy

* Corresponding Author:
Timothy T. Brown, PhD
Associate Director of Research
The Nicholas C. Petris Center on Health Care Markets & Consumer Welfare
University of California, Berkeley
140 Earl Warren Hall, MC7360
Berkeley, CA 94720
Ph: 510-643-4100
Fx: 510-643-4281
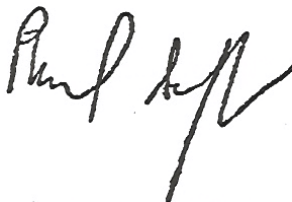Em: tbpetris@berkeley.edu
www.petris.org

FROM THE DIRECTOR

I am pleased to issue *Measuring Mental Health in California's Counties: What Can We Learn?*, the Nicholas C. Petris Center's first report on mental health in California, for three reasons. First, the report advances the Petris Center's mission to provide up-to-date, objective information on the California health care system, particularly issues related to the welfare of California consumers, such as affordability, availability, and quality.

Second, this report is the first that systematically measures the mental health of all Californians by county or county groupings (in the case of very small counties) using household self-reported data. (Self-reported data is necessarily imperfect, and should not be considered an indicator of mental health need in California.) It provides data and information on a series of mental health indicators that enable us to draw a picture of the mental health status throughout California. These mental health indicators include the following: 'doing less overall due to emotional problems,' 'doing one's work less effectively due to depression or anxiety,' 'feeling downhearted and sad,' 'not feeling calm and peaceful,' and 'lacking energy.' These are not clinical measures of mental health, but are a subset of the SF-12, which is used to measure health-related quality of life. They may be culturally biased. We adjust these mental health indicators for the underlying sociodemographics of each California county. Then we statistically observe which counties do better and which do worse. Finally, we score each county on the basis of the observations and present the scores.

Third, we think this report is an important step toward understanding the variations in mental health across the state of California. It should not be viewed a report card, nor as a guide to state mental health planning, but instead as a report that raises significant questions and points to lessons that we can learn. For example, do the counties that did better achieve their score because they organize their mental health system differently? Do they offer different treatment programs? Do they manage their local mental health system with different objectives and measurement tools? On the other hand, do the counties that did not score as well do so because our measurement tools were not sensitive or appropriate for them? Might these counties have other serious mental health problems that were not picked up in our data? Do these counties need additional study to analyze how they are organized and managed? Of course, there are explanations other than the ones that have been suggested.

All of us at the Nicholas C. Petris Center are grateful for the opportunity to present this report as our initial contribution to the great and humane project of improving the well being of Californians in the area of mental health.

Richard M. Scheffler, PhD, Director
Distinguished Professor of Health Economics & Public Policy

ACKNOWLEDGMENTS

PETRIS CENTER RESEARCHERS & STAFF

Nicole Bellows, MHSA, *Graduate Student Researcher*

Timothy T. Brown, PhD, *Associate Director of Research*

Ying Qing Chen, PhD, *Consultant*

Janet Coffman, MA, MPP, *Graduate Student Researcher*

Seana Kelly, BA, *Administrative Assistant*

Paul Kirby, MA, *Project Coordinator*

Nona Kocher, MPH, *AHRQ Pre-Doctoral Trainee*

Hui-Chu Lang, PhD, *AHRQ Post-Doctoral Trainee*

Lisa Simonson Maiuro, MSPH, PhD, *Consultant*

Claudia Martinez, MPH, *Grants Administrator*

Sepideh Modrek, BA, *AHRQ Pre-Doctoral Trainee*

Andrea Murphy, BA, *Graduate Student Researcher*

Esther Neuwirth, PhD, *AHRQ Post-Doctoral Trainee*

Vikram Panthania, MBA, *Graduate Student Researcher*

David Pingitore, PhD, *Consultant*

Brian Quinn, BA, *AHRQ Pre-Doctoral Trainee*

Mary Reed, MPH, *Graduate Student Researcher*

James F. Ross, MBA, *Manager, Finance and Administration*

Helen Schneider, PhD, *Consultant*

Sukyong Seo, MPH, *Graduate Student Researcher*

PETRIS CENTER AFFILIATED FACULTY

Gladys Block, PhD, *Professor of Epidemiology and Public Health Nutrition, University of California, Berkeley*

Farasat Bokhari, PhD, *Assistant Professor of Economics, Florida State University*

Daniel Eisenberg, PhD, *Associate Professor of Health Management and Policy, University of Michigan, Ann Arbor*

Teh-wei Hu, PhD, *Professor Emeritus of Health Economics, University of California, Berkeley*

Carlos Iribarren, MD, MPH, PhD, *Assistant Professor of Epidemiology and Biostatistics, University of California, San Francisco*

Ichiro Kawachi, MD, PhD, *Professor of Health and Social Behavior, Harvard University*

Rick Mayes, PhD, *Assistant Professor of Public Policy, University of Virginia*

Douglas Miller, PhD, *Assistant Professor of Economics, University of California, Davis*

Zak Sabry, PhD, *Professor of Public Health Nutrition, University of California, Berkeley*

John E. Schneider, PhD, *Assistant Professor, University of Iowa*

Douglas Schwalm, PhD, *Assistant Professor of Economics, Louisiana State University*

Richard Smith, PhD, *Assistant Professor of Economics, University of South Florida, St. Petersburg*

Joanne Spetz, PhD, *Assistant Professor of Economics, University of California, San Francisco*

S. Leonard Syme, PhD, *Professor Emeritus of Epidemiology, University of California, Berkeley*

CONTENTS

TABLES/FIGURES

EXECUTIVE SUMMARY

This report provides the first county-level comparison of a detailed set of mental health-related measures in the general California population. The main questions are how do counties differ in terms of their population's mental health status, service utilization, insurance coverage, availability of providers, and government financial resources? Mental health status, our main focus, is measured by self-reported answers to questions adapted from the Short-Form (SF) 12 instrument (doing less overall due to emotional problems, doing work less effectively due to depression or anxiety, feeling downhearted and sad, not feeling calm and peaceful, lacking energy). Most of the data are taken from the first California Health Interview Survey (CHIS), which took place in 2001.

Our analysis focuses on adults, for whom CHIS provides the most information related to mental health and the largest sample size (55,428). The CHIS sampling design allows for county-level estimates in the larger counties. Smaller counties are combined into county groups. Thus, we present data corresponding to CHIS's sampling design, resulting in 41 "strata" rather than 58 separate counties. Most of the 41 strata are single counties and some are county groups. In all cases county groups consist of contiguous counties.

With respect to mental health measures, the primary focus of this report is on differences across counties after adjusting for local socioeconomic and demographic characteristics. These measures allow us to think about differences that may be due to local factors such as public and private delivery systems or community cultural factors. They may be useful to local mental health officials who would like to understand some of the more subtle reasons why a particular county is different from other counties.

In order to compare counties, we choose Los Angeles as the reference county, and implement a 1-3 "star" rating system. We choose LA because it is by far the largest county and because it is near the middle of the distribution for most measures. In our results regarding indicators of mental health problems, we designate counties as "above LA" (1 star), "same as LA" (2 stars), or "below LA" (3 stars) for each measure. In other words, one star represents more mental health

problems than LA (poorer mental health), two stars represents the same level of mental health problems as LA (similar mental health), and three stars represent fewer mental health problems than LA (better mental health).[1] These designations are based upon 95 percent statistical confidence levels, as explained in more detail in the report.

To look at summary measures of mental health in each county, we create "scores" as determined by the following simple formula, based on five mental health measures:

COUNTY SCORE = 5 + (number of "3 star" measures) – (number of "1 star" measures)

The five mental health measures used for this score are those calculated from the five questions listed at the beginning of Section II. Based on this formula, each county can have a score between 0 and 10, with higher scores indicating better mental health at the county level.

Key Findings

- The following counties shared the highest mental health score (7 out of 10). See Section III, Table 4 and Figure 1. Butte, Nevada/Plumas, Riverside, Sacramento, San Diego, Siskiyou/Lassen/ Trinity/Modoc, and Tuolumne/Calaveras/Amador/Inyo/Mariposa/ Mono/Alpine. That many of them are located in or around the Northern California Sierra Mountains suggests that there may be a factor specific to that area that is important. The reasons for better mental health measures in these counties evidently go beyond that which is easily observed in statistics regarding mental health-related resources. Future careful study of the local mental health systems, private mental health delivery, and other local environmental factors in these counties may be revealing. Counties receiving a 6 out of 10 include Kern, Orange, Placer, Shasta, Sonoma, Sutter & Yuba, and Yolo. Again, we see a concentration of Northern counties near the Sierras.

---

[1] The use of LA as a reference county does not affect the findings of this report. County rankings would have been the same regardless of which county was chosen as a reference point (see also Section 6.ii).

- Alameda and San Francisco share the lowest score (3). See Section III, Table 4 and Figure 1. Both have high adjusted rates of limitations due to emotional problems. These problems exist despite high levels of mental health providers, particularly in San Francisco (see Section IV, Table 7). Both counties contain large, ethnically diverse cities with both affluent and impoverished neighborhoods. It is possible that areas with such a range of constituents have unique mental health needs that are very difficult to meet. Counties with a score of 4 include Mendocino/Lake, San Bernardino, Solano, Stanislaus, and Tulare. With the exception of Mendocino/Lake, these counties are all located in and around the Central Valley area running north to south through the state, and have low concentrations of mental health providers (see Section IV).

- Simple unadjusted measures related to mental health exhibit even more variation than the adjusted ones (see Section II, Table 1). This suggests that many differences across counties in mental health status are related to basic socioeconomic and demographic characteristics of those counties. This point is underscored by significant racial differences in mental health measures (see Section III, Table 5), which we discuss briefly in this report although the topic is not a primary focus.

Broad Lessons for Policymakers

We hope that the results in this study will be useful to policymakers and other decision-makers. It is important to realize that mental health is complex and the determinants numerous. The role of social services, the prison system, and the structure of communities are but a few worth noting. We would like to suggest the following four conclusions:

First, the CHIS data affirm that mental health is a concept that goes beyond clinical diagnoses. Efforts to improve mental health should not be limited solely to those persons affected by what is typically referred to as "serious mental illness." The type of data presented here may be useful in developing a more global, public health approach to complement the increasingly medicalized and specialized approaches that are linked to single or specific psychiatric diagnoses.

Second, the results provided in this report show that the county variation in self-reported mental health cannot be fully explained by demographic and socioeconomic characteristics such as age, gender, race, education, and income. The variation in mental health-related measures remaining after adjusting for these basic population characteristics suggests it would be worthwhile to understand more about these differences.

Third, our study suggests that these differences in mental health indicators are not related to basic population characteristics. Further study of counties on the high and low ends of mental health scores in our report may be revealing in a number of ways. Possibilities include potentially important factors for which adequate data do not currently exist at local population levels: for example, the extent of private financing of mental health, and the type of management and organization of local delivery systems. These factors warrant further study.

Fourth, raw differences in mental health-related indicators across counties (without adjusting for socioeconomic and demographic characteristics) are substantial and merit attention. Policymakers should always keep in mind the raw differences in mental health-related indicators, regardless of their causes.

It is important to recognize the limitations in the scope of our study. Most notably, CHIS data do not include information on homeless or institutionalized people, and the measures of mental health are relatively limited in both number and detail. Nevertheless, we hope this research will serve as a starting point for a better understanding of population level mental health in California.

I. INTRODUCTION

In this report, all health data are taken from the first California Health Interview Survey (CHIS), which took place in 2001 (www.chis.ucla.edu). CHIS interviewed three different age groups: adults, adolescents, and children. The largest sample is for the adult group with 55,428 individual responses, followed by children with 12,592 and adolescents with 5,801. The overall response rate for the CHIS survey, 43 percent, may appear low, but is comparable to other health surveys such as the Centers for Disease Control's Behavioral Risk Factor Surveillance System (BRFSS) (www.cdc.gov/brfss/). It is reassuring that CHIS's sample looks very similar to other large California samples, such as the Census (www.census.gov) and the BRFSS, in terms of demographics and basic health characteristics. A technical report (Technical Paper No. 1) regarding CHIS's response rates and representativeness concludes that the 2001 CHIS data "provide a reliable approximation of the California population along the health and demographic dimensions measured" (www.chis.ucla.edu/pdf/2001_response_representativeness.pdf).

This report is designed to facilitate comparisons across counties. The data are discussed measure-by-measure, highlighting notable differences across areas. The CHIS sampling design allows for county-level estimates in the larger counties. Smaller counties are combined into county groups. We present data corresponding to CHIS's sampling design resulting in 41 "strata" rather than 58 separate counties. Most of the 41 strata are single counties and some are county groups. In all cases the county groups consist of counties that are contiguous.

The report is intended to serve as a reference for California policymakers, researchers, providers, clients, and funders. We highlight differences across counties with the idea that this information can eventually be used to understand where service needs may be greatest, how mental health systems are faring, and how systems might be improved. It is important to keep in mind that differences across counties can arise for a variety of reasons, many of which are not well understood. This document is not intended to be a "report card," but rather a source of information that will help us to learn from the diversity of the counties within the state. By highlighting differences across counties, we hope this report will serve as a starting point for

understanding why the differences exist and how they may be relevant to improving mental health in some areas.

The first step in our analysis is to convert the scaled CHIS variables to binary variables. For example, one question from CHIS asks, "Would you say you have felt calm and peaceful all of the time, most of the time, some of the time, a little of the time or not at all?" For this variable, we code each adult as "1" if they responded that they felt calm and peaceful either "a little of the time" or "not at all", and "0" otherwise. Next, in order to compare counties, we use the same binary variables to create "adjusted differences" across counties that control for the socioeconomic and demographic differences (gender, age, income, education, and race) within each county.

The report focuses on the adjusted rates because they go beyond the socioeconomic and demographic explanations and allow us to think about differences that may be due to local factors such as delivery systems or community cultural factors. The adjusted rates may be more useful to local mental health officials who would like to understand some of the more subtle reasons why a particular county is different from other counties. We combine various adjusted measures of mental health in counties to produce county "scores" on a scale of 0-10. The method for constructing these scores is described in Section III.

Prior reports on mental health in California have largely focused on severe mental illness.[2] Four classes of severe mental illness are among the top 10 in the World Health Organization's "Global Burden of Disease" rankings: major depression (#1), bipolar disorder (#6), schizophrenia (#9), obsessive compulsive disorders (#10). California's public mental health system is largely oriented towards serving clients with such severe conditions. However, mental health is essential to everyone's well being and can be conceived as a continuum, as well as an ill-versus-healthy dichotomy. The estimates in this report should help to fill in a broader picture of mental health in California that is not based on specific diagnoses, but captures more general aspects of

---

[2] Recent excellent reports related to mental health in California include "California's Mental Health Master Plan" (2003) by the California Mental Health Planning Council, "The Mental Health Workforce: Who's Meeting California's Needs?" (2003) by the California Workforce Initiative, and "The State of the State of Behavioral Health" (2000) by the California Healthcare Foundation.

mental health, like feelings of sadness, feelings of calmness, and measures of energy and functionality.

The data show substantial variation for most of the mental health measures. The data also reveal a fair amount of heterogeneity within local areas, i.e., many areas appear to be well off according to some mental health indicators but not others. The analysis indicates that significant differences across counties remain even after adjusting for socioeconomic and demographic characteristics.

In order to compare counties, we choose Los Angeles as the reference county. For most measures, higher values indicate greater mental health problems. We designate other counties as "above LA" (1 star), "same as LA" (2 stars), and "below LA" (3 stars). In other words, one star represents more mental health problems than LA (poorer mental health), two stars represents the same level of mental health problems as LA (similar mental health), and three stars represent fewer mental health problems than LA (better mental health).

When viewing the data in this report, one should keep in mind that there is some degree of imprecision. CHIS is based on a sub-sample of Californians, not a complete census, so the rates shown in this report are estimates of the true population rates. The differences between the stars are based on 95 percent statistical confidence levels. A 95 percent statistical confidence level implies that, given the amount of precision with which the CHIS sample approximates the whole population, we can say with 95 percent confidence that the true county level measure or rate is in fact above or below (or neither) the reference county's value. In other words, the amount of difference we observe is not simply due to sampling error.

Beyond the issue of sampling, there is also the issue that self-reported health is not always perfectly reported. Some people may be reluctant to admit to problems, or they may not recall their health problems accurately. The stigma frequently associated with mental illness suggests that self-reports may underestimate the extent and frequency of problems.

This report is divided into five sections following the introductory section. We begin in Section II with background data, including differences across counties before we adjust for

socioeconomic and demographic factors. Next, in Section III, we present our main results, in which we do adjust for these factors. We conduct this analysis only for adults because the adolescent and child samples are not large enough to examine adjusted differences for most measures. Section IV presents some additional data related to how well counties may be equipped to handle the mental health problems indicated in Section III. This section includes information on mental health utilization, insurance coverage for mental health, numbers of mental health providers, and county mental health budgets. Section V discusses some broad lessons that may be drawn from the data presented. Finally, Section VI discusses the technical methods that underpin our analysis.

II. BACKGROUND DATA

We begin our presentation of data by examining simple mental health-related differences across counties *without* adjusting for socioeconomic and demographic characteristics. These measures are informative in a different way than the adjusted measures presented in the next section. The unadjusted measures give less information about the factors behind county-level differences, but they may be the most relevant from the perspective of someone trying to gauge where mental health needs are greatest. To get a broad picture of mental health status in each county or region, we examine a series of items related to emotional well-being and substance abuse for adults. The measures related to emotional well-being are based on questions taken from the Short Form 12 (SF-12) health index. All data presented are from CHIS 2001.

We examine the following variables: limitations on general activity or work due to emotional problems, sadness, anxiety, lack of energy, binge drinking, and measures of mental health need. The mental health indicators in CHIS are adapted from the widely used Short Form (SF) 12 instrument, which has been validated and used worldwide in a variety of populations and contexts (see, e.g., Ware JE, Kosinski M, and Keller SD, 1996, and also see Section VI, iii). The survey questions are the following:

During the past 4 weeks…

1) Did you do LESS than you would have liked because of any kind of emotional problems?

2) Did you NOT do your work or other activities as well as usual because of emotional problems such as feeling depressed or anxious?

3) Did you feel downhearted and sad all of the time, most of the time, some of the time, a little of the time or not at all?

4) Would you say you have felt calm and peaceful all of the time, most of the time, some of the time, a little of the time or not at all?

5) Did you have a lot of energy all of the time, most of the time, some of the time, a little of the time or not at all?

Questions 1 and 2 are straightforward to code as binary (yes/no) variables. For question 3, we calculate what percent of the survey respondents reported feeling downhearted and sad "most of the time" or "all of the time." Similarly, we look at the percent of people who reported feeling calm and peaceful "a little of the time" or "not at all," for question 4 and we followed the same rule for the last question regarding energy level. Note that these cut-offs do not correspond to clinical definitions of depression or anxiety (indeed the SF-12 is not a clinical diagnostic device). We choose these cut-offs simply because they capture a reasonably sized portion of the sample in each case whose responses are suggestive of mental health problems.[3]

UNADJUSTED DATA ELEMENTS

All data described in this section are shown in Table 1.

Limitations Due to Emotional Problems (question #1 above)**:** Statewide, 12.7% of adults answer yes to question #1 above; i.e. they did less than they wanted in the past 4 weeks due to emotional problems. San Francisco (16.1%) was the only county significantly above the state rate. Low rates for question #1 include Nevada/Plumas/Sierra, Placer, Riverside, and San Diego.

Limitations in Work or Other Activities (question #2 above)**:** Statewide, the rate is 15.6%. The following counties are significantly above the state rate: Humboldt/Del Norte (19.4%), Los Angeles (17.4%), and San Francisco (21.0%). Nevada/Plumas/Sierra, Orange, Placer, and San Diego counties are significantly below the state rate.

Sadness (question #3 above)**:** Statewide, 3.8% report being "downhearted and sad" either "all of the time" or "most of the time." As noted earlier, this measure does not correspond to an official diagnosis of any sort, but it is interesting to note that its prevalence is in the range of most estimates of major depression (around five percent). No county had prevalence above the state average. Low rates exist in Contra Costa, Marin, Napa, Nevada/Plumas/Sierra, Sacramento, Sonoma, Tuolumne/Calaveras/Amador/Inyo/Mariposa/Mono/Alpine, and Yolo.

---

[3] It should also be noted the answers to these questions may be affected by the culture and language of the survey respondent. Although the survey was presented in the language of each respondent, differing cultural understandings of each question may affect the answers given (also see Section VI, iii).

Table 1: Adult Background Data

County	Did Less than Wanted	Less Work than Usual	Downhearted and Sad	Not Calm or Peaceful	Not Energetic	5+ Drinks (Binge)	Need Help for Mental Health in Past Year	Insurance Covers Mental Health
Alameda	15.5%	18.5%	3.3%	10.9%	11.1%	14.4%	*19.1%*	*78.2%*
Butte	12.2%	14.4%	2.6%	9.5%	10.8%	17.5%	15.8%	66.9%
Contra Costa	10.5%	13.0%	*2.2%*	10.6%	10.4%	13.5%	13.2%	*82.6%*
El Dorado	11.6%	15.9%	4.1%	10.6%	11.9%	*20.4%*	15.8%	*73.3%*
Fresno	15.0%	17.3%	5.6%	14.0%	14.1%	15.2%	15.6%	63.1%
Humboldt & Del Norte	15.5%	*19.4%*	4.8%	11.4%	*15.9%*	*21.3%*	18.6%	65.5%
Imperial	13.4%	16.5%	3.8%	*14.8%*	12.7%	17.0%	13.9%	*56.0%*
Kern	12.9%	16.2%	3.4%	*14.5%*	*15.5%*	17.0%	13.9%	64.4%
Kings	13.5%	16.6%	4.8%	13.7%	15.3%	16.3%	15.0%	63.8%
Los Angeles	13.8%	*17.4%*	4.4%	12.5%	12.1%	14.3%	15.3%	*59.2%*
Madera	12.4%	16.8%	4.2%	11.9%	13.5%	12.9%	14.0%	64.1%
Marin	12.9%	15.4%	*1.5%*	*7.5%*	*8.5%*	17.2%	17.9%	*81.8%*
Mendocino & Lake	14.6%	18.1%	5.2%	*16.1%*	*16.5%*	15.6%	*19.4%*	65.5%
Merced	15.4%	17.3%	4.8%	13.1%	14.1%	14.8%	15.6%	*60.9%*
Monterey & San Benito	12.1%	15.7%	3.2%	11.7%	12.1%	12.6%	12.5%	*60.4%*
Napa	11.1%	13.9%	*2.1%*	11.3%	13.8%	18.3%	17.6%	*78.7%*
Nevada, Plumas & Sierra	*9.9%*	*12.2%*	*1.6%*	*7.8%*	10.4%	17.2%	15.5%	71.6%
Orange	11.4%	*13.3%*	4.0%	*9.2%*	10.1%	15.5%	14.4%	67.4%
Placer	*9.9%*	*10.7%*	2.5%	*7.7%*	10.2%	12.9%	13.7%	*86.6%*
Riverside	*10.1%*	13.4%	3.6%	13.3%	13.8%	16.5%	*12.6%*	64.8%
Sacramento	10.6%	13.7%	*2.2%*	9.6%	12.9%	16.4%	15.0%	*76.3%*
San Bernardino	13.9%	16.9%	4.3%	11.6%	14.2%	16.4%	13.7%	66.1%
San Diego	*10.6%*	*12.9%*	3.7%	10.2%	*9.9%*	15.7%	15.5%	70.0%
San Francisco	*16.1%*	*21.0%*	3.7%	10.4%	10.7%	*20.6%*	*20.7%*	69.6%
San Joaquin	14.0%	16.4%	5.4%	12.9%	13.8%	15.4%	14.4%	68.1%
San Luis Obispo	11.6%	13.9%	2.6%	8.4%	10.8%	*20.4%*	15.8%	64.4%
San Mateo	11.5%	13.8%	4.0%	9.9%	10.3%	15.9%	13.9%	*77.8%*
Santa Barbara	12.3%	14.3%	3.7%	10.5%	10.3%	17.1%	16.3%	63.5%
Santa Clara	11.4%	14.2%	3.4%	10.0%	*9.2%*	*12.7%*	*12.2%*	*71.7%*
Santa Cruz	13.9%	17.0%	3.1%	11.8%	*9.1%*	*21.9%*	17.1%	68.6%
Shasta	10.9%	14.6%	4.7%	11.7%	*15.1%*	14.2%	14.8%	64.7%
Siskiyou, Lassen, Trinity & Modoc	11.9%	14.1%	3.3%	9.7%	*15.4%*	14.4%	17.6%	62.9%
Solano	12.8%	15.1%	4.2%	10.9%	12.9%	13.8%	15.7%	*83.1%*
Sonoma	11.7%	13.3%	*1.9%*	10.1%	10.1%	21.0%	16.1%	*74.9%*
Stanislaus	14.8%	15.4%	4.8%	14.6%	*17.7%*	16.4%	14.0%	67.1%
Sutter & Yuba	11.6%	14.8%	3.7%	12.4%	14.9%	14.7%	*11.5%*	69.7%
Tehama, Glenn & Colusa	13.0%	16.9%	5.9%	14.1%	*15.3%*	16.7%	15.9%	*58.1%*
Tulare	16.0%	18.7%	5.2%	*17.2%*	*18.1%*	15.7%	13.9%	*53.2%*
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	10.7%	13.6%	*2.2%*	*8.6%*	11.4%	16.2%	13.7%	69.5%
Ventura	11.2%	13.0%	2.9%	12.4%	11.1%	15.7%	17.4%	*72.6%*
Yolo	14.4%	15.4%	*2.4%*	11.3%	10.2%	19.9%	16.1%	71.0%
California Average	12.7%	15.6%	3.8%	11.4%	11.8%	15.5%	15.1%	67.0%

Source: Petris Center analysis of CHIS 2001 data.
Note: Differences from state averages at 95 percent confidence level are bolded and italicized.

Anxiety (Not Calm or Peaceful) (question #4 above)**:** Statewide, 11.4% report feeling calm or peaceful only a "little of the time" or "not at all." Again, this measure is not a clinical diagnosis, but it is interesting to note that its prevalence is close to the NIMH estimate of anxiety disorder prevalence in U.S. adults (13.3%). The highest rates for the measure are in Tulare (17.2%) and Mendocino/Lake (16.1%). Other counties with high rates include Imperial and Kern. Low rates are recorded in Marin, Nevada/Plumas/Sierra, Orange, Placer, and Tuolumne/Calaveras/Amador/ Inyo/Mariposa/Mono/Alpine.

Lack of Energy (question #5 above)**:** Statewide, 11.8% say they have a lot of energy only "a little of the time" or "not at all." Lack of energy is a well-known symptom of depression. The highest rates are in Tulare (18.1%) and Stanislaus (17.7%). Other counties with high rates are Humboldt/Del Norte, Kern, Mendocino/Lake, Shasta, Siskiyou/Lassen/Trinity/Modoc, and Tehama/Glenn/Colusa. Low rates are in Marin, San Diego, Santa Clara, and Santa Cruz.

Binge Drinking: Binge drinking is commonly defined as consuming five or more alcoholic drinks on an occasion. Statewide, 15.5% of adults report binge drinking at least once in the past month. Counties with significant rates exceeding 20% include Santa Cruz (21.9%), Humboldt/Del Norte (21.3%), San Francisco (20.6%), El Dorado (20.4%), and San Luis Obispo (20.4%). The only county with a low rate was Santa Clara.

Needed Mental Health Care in Past Year: Statewide, 15.1% answer yes to the question, "During the past 12 months, did you think you needed help for emotional or mental health problems, such as feeling sad, blue, anxious or nervous?" The highest rates are in San Francisco (20.7%), Mendocino/Lake (19.4%), and Alameda (19.1%). The lowest rates for reported mental health need are in Sutter/Yuba, Santa Clara, and Riverside.

III. RESULTS: ADULT MENTAL HEALTH DIFFERENCES BY COUNTY, ADJUSTED FOR SOCIOECONOMICS/DEMOGRAPHICS

As shown in the previous section, we find substantial differences between counties and county groups with regards to a number of mental health-related measures. It is possible that much of this variation can be attributed to differences in socioeconomic and demographic factors like gender, age, income, education and race.

In this section, we adjust for these socioeconomic and demographic factors using multivariate regression analysis. We examine which counties have higher or lower rates for mental health measures that cannot be "explained" by socioeconomic and demographic factors. We chose Los Angeles County as the reference county to serve as a point of comparison, because it is the largest county and, as the results show, it is fairly close to the median county for most measures.[4] The adjusted differences across counties are particularly relevant to county mental health systems, because they might be interpreted as indicators of how each mental health system is doing after allowing for differences in socioeconomics and demographics. Section VI.ii describes the process we use to create the adjusted rates described in this section.

Results are shown in Table 2. Each column corresponds to a separate mental health-related measure. The set of socioeconomic control variables, as described in the appendix, are included in each regression, but only the estimated regression coefficients for the county dummies are shown (with 95% confidence intervals).[5] The coefficients in the table represent predicted changes in probability, on a scale from 0 to 1 (so a coefficient of, say, 0.05, implies a five percent change in probability). The results can be interpreted in the following way: if we allow for socioeconomic differences across counties, how much "better" or "worse" is a county's rate compared to the baseline county (Los Angeles). Therefore, a positive coefficient represents a higher than expected rate after controlling for the socioeconomic and demographic variables and a negative coefficient represents a lower than expected rate.

---

[4] The use of LA as a reference county does not affect the findings of this report. County rankings would have been the same regardless of which county was chosen as a reference point (see also Section 6.ii).
[5] The estimated coefficients for the socioeconomic variables are certainly of interest, but these relationships are outside the scope of this report. These results are available on request.

Table 2: Adult Mental Health Regression Results

Counties	Did Less than Wanted	Less Work than Usual	Downhearted and Sad	Not Calm or Peaceful	Not Energetic	5+ Drinks (Binge)	Need Help for Mental Health in Past Year	Difficulty/Delay in Mental Health Care	"Unmet" Mental Health Need
Alameda	*0.032*	*0.035*	-0.004	0.011	0.011	0.009	*0.050*	*0.008*	0.006
Butte	-0.020	-0.027	*-0.015*	-0.014	*-0.023*	0.019	-0.017	-0.005	-0.007
Contra Costa	-0.009	-0.011	-0.011	0.019	0.007	-0.003	-0.013	0.001	-0.005
El Dorado	-0.008	0.007	0.003	0.017	0.007	*0.051*	-0.010	0.003	-0.009
Fresno	0.003	-0.009	0.005	0.005	0.008	0.001	-0.006	-0.003	-0.009
Humboldt & Del Norte	0.004	0.011	0.000	-0.001	0.016	*0.057*	-0.004	0.004	-0.017
Imperial	-0.013	-0.022	-0.009	-0.002	-0.016	0.024	-0.017	0.004	-0.015
Kern	-0.016	-0.020	*-0.010*	0.014	0.017	0.013	*-0.029*	-0.001	*-0.017*
Kings	-0.014	-0.021	-0.001	0.000	0.017	0.005	-0.019	-0.003	-0.001
Los Angeles (baseline)									
Madera	-0.023	-0.016	-0.005	-0.015	-0.008	-0.018	-0.026	-0.004	*-0.017*
Marin	0.032	0.028	-0.014	-0.006	-0.004	*0.039*	0.026	0.003	-0.004
Mendocino & Lake	0.001	0.006	0.001	*0.044*	0.018	0.015	0.017	0.001	0.002
Merced	0.002	-0.014	-0.002	-0.004	0.002	-0.004	-0.013	0.001	-0.005
Monterey & San Benito	-0.010	-0.008	-0.007	-0.001	0.004	-0.022	-0.025	0.001	-0.010
Napa	-0.007	-0.008	-0.013	0.017	0.027	*0.035*	0.021	0.006	0.002
Nevada, Plumas & Sierra	*-0.026*	-0.028	*-0.019*	-0.016	-0.016	*0.040*	-0.009	0.000	-0.017
Orange	-0.009	*-0.021*	0.002	-0.014	-0.003	0.005	-0.008	-0.003	0.000
Placer	-0.015	*-0.034*	-0.008	-0.008	-0.002	-0.020	-0.020	0.001	-0.006
Riverside	*-0.033*	*-0.032*	-0.004	0.016	0.009	0.017	*-0.030*	-0.004	-0.013
Sacramento	*-0.024*	-0.021	*-0.016*	-0.006	0.019	0.020	-0.005	0.001	-0.014
San Bernardino	0.001	-0.003	-0.001	-0.004	*0.020*	0.008	*-0.025*	-0.001	-0.010
San Diego	*-0.022*	*-0.030*	-0.002	-0.004	-0.013	0.005	-0.003	-0.002	-0.011
San Francisco	*0.044*	*0.065*	-0.002	0.010	0.010	*0.077*	*0.074*	*0.010*	*0.024*
San Joaquin	0.000	-0.007	0.006	0.012	0.014	0.006	-0.012	-0.001	0.003
San Luis Obispo	-0.016	-0.023	-0.011	-0.018	-0.010	*0.049*	-0.013	0.008	-0.014
San Mateo	0.003	-0.002	0.006	0.008	0.010	0.023	0.000	0.000	-0.016
Santa Barbara	-0.010	-0.022	-0.002	-0.006	-0.015	0.013	0.003	0.002	0.006
Santa Clara	0.002	0.000	0.000	0.005	0.003	-0.012	-0.013	0.002	-0.006
Santa Cruz	0.015	0.012	-0.006	0.017	-0.015	*0.059*	0.004	*0.011*	-0.016
Shasta	*-0.030*	-0.022	0.000	0.012	0.013	-0.001	-0.024	-0.003	-0.016
Siskiyou, Lassen, Trinity & Modoc	-0.024	*-0.031*	*-0.012*	-0.016	0.009	0.004	-0.003	0.000	0.003
Solano	-0.002	-0.007	0.002	0.009	*0.023*	-0.006	0.007	0.005	0.003
Sonoma	-0.001	-0.016	*-0.015*	0.007	-0.008	*0.056*	0.001	-0.003	0.001
Stanislaus	0.007	-0.019	0.002	0.023	*0.045*	0.011	-0.023	0.000	*-0.022*
Sutter & Yuba	*-0.027*	-0.027	-0.008	0.005	0.014	-0.006	*-0.048*	-0.002	*-0.023*
Tehama, Glenn & Colusa	-0.019	-0.013	0.005	0.012	0.003	0.018	-0.016	-0.003	-0.013
Tulare	0.004	-0.006	-0.001	0.022	*0.027*	0.003	-0.027	*-0.005*	-0.012
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	*-0.025*	-0.023	*-0.016*	-0.014	-0.014	0.029	*-0.028*	0.000	-0.018
Ventura	-0.011	-0.025	-0.007	0.018	0.000	0.004	0.018	0.001	-0.017
Yolo	0.006	-0.015	*-0.013*	0.006	-0.005	*0.046*	-0.005	0.002	-0.014

Source: Petris Center analysis of CHIS 2001 data.
Note: Differences from baseline county (Los Angeles) exceeding 95 percent confidence level are bolded and italicized.

If an estimated coefficient's 95% confidence interval includes only numbers below zero, then we designate that county as 3 stars for that particular measure (because, in essence, we are 95% confident that it has a negative value and is "below LA" in this measure). If the confidence interval includes both negative and positive numbers, then we designate the county as 2 stars because we cannot rule out with 95% confidence that its coefficient is zero. If the interval includes only positive numbers, then we designate the county as 1 star for that measure (because we are 95% confident that it is "above LA"). In other words, one star represents more mental health problems than LA (poorer mental health), two stars represents the same level of mental health problems as LA, (similar mental health) and three stars represent fewer mental health problems than LA (better mental health). The results in terms of the star rating system are shown in Table 3.

Focusing on San Diego County as an example of how to read the results in Tables 2 and 3, we can see that San Diego County residents appear to be faring significantly better than expected on a number of variables. After taking into account the gender, age, income, education, and race composition within the county, fewer than expected San Diego County residents reported that they did less than they wanted because of emotional problems (question 1) and that emotional problems interfered with work or other activities (question 2).

Here we summarize the results for each measure as follows:

Limitations Due to Emotional Problems: For this measure ("did less than you would have liked due to emotional or mental health problems"), Los Angeles is again not far from the median (25 of 40 counties with negative coefficients). San Francisco (0.044) and Alameda (0.032) have significant positive coefficients ("1 star"). Riverside (-0.033), Shasta (-0.030), Sutter/Yuba (-0.027), Nevada/Plumas/Sierra (-0.026), Tuolumne/Calaveras/Amador/Inyo/ Mariposa/Mono/Alpine (-0.025), Sacramento (-0.024), and San Diego (-0.022) have significant negative coefficients ("3 stars").

Table 3: Adult Mental Health "Star" Results

County	Did Less than Wanted	Less Work than Usual	Downhearted and Sad	Not Calm or Peaceful	Not Energetic	5+ Drinks (Binge)	Needed Help for Mental Health	Difficulty/Delay in Mental Health Care	"Unmet" Mental Health Need
Alameda	★	★	★★	★★	★★	★★	★	★	★★
Butte	★★	★★	★★★	★★	★★★	★★	★★	★★	★★
Contra Costa	★★	★★	★★	★★	★★	★★	★★	★★	★★
El Dorado	★★	★★	★★	★★	★★	★	★★	★★	★★
Fresno	★★	★★	★★	★★	★★	★★	★★	★★	★★
Humboldt & Del Norte	★★	★★	★★	★★	★★	★	★★	★★	★★
Imperial	★★	★★	★★	★★	★★	★★	★★	★★	★★
Kern	★★	★★	★★★	★★	★★	★★	★★★	★★	★★★
Kings	★★	★★	★★	★★	★★	★★	★★	★★	★★
Los Angeles (baseline)									
Madera	★★	★★	★★	★★	★★	★★	★★	★★	★★★
Marin	★★	★★	★★	★★	★★	★	★★	★★	★★
Mendocino & Lake	★★	★★	★★	★	★★	★★	★★	★★	★★
Merced	★★	★★	★★	★★	★★	★★	★★	★★	★★
Monterey & San Benito	★★	★★	★★	★★	★★	★★	★★	★★	★★
Napa	★★	★★	★★	★★	★★	★	★★	★★	★★
Nevada, Plumas & Sierra	★★★	★★	★★★	★★	★★	★	★★	★★	★★
Orange	★★	★★★	★★	★★	★★	★★	★★	★★	★★
Placer	★★	★★★	★★	★★	★★	★★	★★	★★	★★
Riverside	★★★	★★★	★★	★★	★★	★★	★★★	★★	★★
Sacramento	★★★	★★	★★★	★★	★★	★★	★★	★★	★★
San Bernardino	★★	★★	★★	★★	★	★★	★★★	★★	★★
San Diego	★★★	★★★	★★	★★	★★	★★	★★	★★	★★
San Francisco	★	★	★★	★★	★★	★	★	★	★
San Joaquin	★★	★★	★★	★★	★★	★★	★★	★★	★★
San Luis Obispo	★★	★★	★★	★★	★★	★	★★	★★	★★
San Mateo	★★	★★	★★	★★	★★	★★	★★	★★	★★
Santa Barbara	★★	★★	★★	★★	★★	★★	★★	★★	★★
Santa Clara	★★	★★	★★	★★	★★	★★	★★	★★	★★
Santa Cruz	★★	★★	★★	★★	★★	★	★★	★	★★
Shasta	★★★	★★	★★	★★	★★	★★	★★	★★	★★
Siskiyou, Lassen, Trinity & Modoc	★★	★★★	★★★	★★	★★	★★	★★	★★	★★
Solano	★★	★★	★★	★★	★	★★	★★	★★	★★
Sonoma	★★	★★	★★★	★★	★★	★	★★	★★	★★
Stanislaus	★★	★★	★★	★★	★	★★	★★	★★	★★★
Sutter & Yuba	★★★	★★	★★	★★	★★	★★	★★★	★★	★★★
Tehama, Glenn & Colusa	★★	★★	★★	★★	★★	★★	★★	★★	★★
Tulare	★★	★★	★★	★★	★	★★	★★	★★★	★★
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	★★★	★★	★★★	★★	★★	★★	★★★	★★	★★
Ventura	★★	★★	★★	★★	★★	★★	★★	★★	★★
Yolo	★★	★★	★★★	★★	★★	★	★★	★★	★★

Source: Petris Center analysis of CHIS data.

Note: One star represents significantly worse results than expected and three stars represents significantly better results than expected. Two stars represent results as expected based on socio-economic characteristics of the county.

Limitations (#2): San Francisco (0.065) and Alameda (0.035) also have significant positive coefficients ("1 star") for the second measure of limitations due to emotional problems ("did work or other activities…"). Counties or county groups with significant negative coefficients ("3 stars") are Placer (-0.034), Riverside (-0.032), Siskiyou/Lassen/ Trinity/Modoc (-0.031), San Diego (-0.030), and Orange (-0.021).

Sadness: Los Angeles is one of the higher counties for this measure (feeling "downhearted and sad" either "most of the time" or "all of the time"), with 28 of 40 counties having negative coefficients. No counties have significant positive coefficients. Counties or county groups with significant negative coefficients ("3 stars") are Nevada/Plumas/ Sierra (-0.019), Tuolumne/ Calaveras/Amador/ Inyo/Mariposa/Mono/Alpine (-0.016), Sacramento (-0.016), Butte (-0.015), Sonoma (-0.015), Siskiyou/Lassen/Trinity/Modoc (-0.012), Yolo (-0.013), and Kern (-0.010).

Anxiety: The baseline (Los Angeles) is near the median for this measure (feeling "calm and peaceful" either "a little of the time" or "not at all"), with 17 of 40 counties having negative coefficients. Mendocino/Lake (0.044) is the only county or county group with a significant coefficient and is a "1 star" county group.

Lack of Energy: 14 of 40 counties have negative coefficients for this measure ("a lot of energy" "a little of the time" or "not at all"), meaning Los Angeles is worse off than the median county. "1 star" counties (with significant positive coefficients) include Stanislaus (0.045), Tulare (0.027), Solano (0.023), and San Bernardino (0.020). Butte (-0.023) is the only "3 star" county.

Binge Drinking: Los Angeles is near the bottom of the counties in terms of adjusted binge drinking rates, with only 9 of 40 counties having negative coefficients. The significant positive coefficients ("1 star") include San Francisco (0.077), Santa Cruz (0.059), Humboldt/Del Norte (0.057), Sonoma (0.056), El Dorado (0.051), San Luis Obispo (0.049), Yolo (0.046), Nevada/ Plumas/Sierra (0.40), Marin (0.039), and Napa (0.035). There are no counties significantly below Los Angeles.

Mental Health Need: This measure is based on yes/no responses to the question "During the past 12 months, did you think you needed help for emotional or mental health problems, such as feeling sad, blue, anxious or nervous?" Los Angeles is at the higher end in terms of mental health need reported, with just 11 of 40 counties having positive coefficients. Two counties are

still significantly above Los Angeles ("1 star"): San Francisco (0.074) and Alameda (0.050). Counties with significant negative coefficients ("3 stars"), on the other hand, include Sutter/Yuba (-0.048), Riverside (-0.030), Kern (-0.029), Tuolumne/Calaveras/Amador/Inyo/Mariposa/ Mono/Alpine (-0.028), and San Bernardino (-0.025).

Difficulties/Delays Getting Mental Health Care: Los Angeles is near the median for this measure ("Did you have difficulties or delays in getting mental health care during the past year?"), with 15 of 40 counties having negative coefficients. Significant positive coefficients ("1 star") are in Santa Cruz (0.011), San Francisco (0.010), and Alameda (0.008). Tulare (-0.005) is the only county with a significant negative coefficient ("3 stars").

"Unmet" Mental Health Need: We construct a measure of "unmet need" by calculating the proportion of people in each county who: a) said that they needed mental health care in the past year; and b) did not report either seeing a mental health specialist or taking a prescription for mental health problems. Note that reports of difficulties or delays in getting mental health care are not included in this measure. Los Angeles is near the top for "unmet need," with only 10 of 40 counties having positive coefficients. San Francisco (0.024) is the only county significantly above Los Angeles. Counties with significant negative coefficients are Sutter/Yuba (-0.023), Stanislaus (-0.022), Kern (-0.017), and Madera (-0.017).

SYNTHESIZING MENTAL HEALTH MEASURES INTO COMPOSITE "SCORES" (0-10)

After allowing for differences across counties in basic demographic and socioeconomic characteristics, some important differences remain in mental health-related measures. San Francisco and Alameda counties, for example, appear to be areas of special concern in terms of some mental health measures, mental health need, and difficulties and delays in mental health care. Evidently, counties such as these have unique conditions that go beyond basic socioeconomic and demographic characteristics of their populations.

To look at summary measures of mental health in each county, we create "scores" as determined by the following simple formula, based on five mental health measures:

COUNTY SCORE = 5 + (number of "3 star" measures) – (number of "1 star" measures)

The five mental health measures used for this score are those calculated from the five questions listed at the beginning of Section II. Based on this formula, each county can have a score between 0 and 10, with higher scores indicating better mental health at the county level. Both Table 4 and Figure 1 (a map of the counties) show these scores.

Table 4:   Adult Mental Health County "Scores"

Category	County	Score
Better than Expected	Butte	7
	Nevada, Plumas & Sierra	7
	Riverside	7
	Sacramento	7
	San Diego	7
	Siskiyou, Lassen, Trinity & Modoc	7
	Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	7
	Kern	6
	Orange	6
	Placer	6
	Shasta	6
	Sonoma	6
	Sutter & Yuba	6
	Yolo	6
As Expected (Based on Socioeconomic and Demographic Characteristics)	Contra Costa	5
	El Dorado	5
	Fresno	5
	Humboldt & Del Norte	5
	Imperial	5
	Kings	5
	Los Angeles	5
	Madera	5
	Marin	5
	Merced	5
	Monterey & San Benito	5
	Napa	5
	San Joaquin	5
	San Luis Obispo	5
	San Mateo	5
	Santa Barbara	5
	Santa Clara	5
	Santa Cruz	5
	Tehama, Glenn & Colusa	5
	Ventura	5
Worse than Expected	Mendocino & Lake	4
	San Bernardino	4
	Solano	4
	Stanislaus	4
	Tulare	4
	Alameda	3
	San Francisco	3

Source: Petris Center analysis of CHIS 2001 data.
Note: These are the same "scores" depicted in Figure 1. See notes in Figure 1 for explanation of how scores are calculated.

Figure 1. Adult Mental Health "Scores" (0-10)

Legend

Score

- **3** Worse than expected
- **4** Worse than expected
- **5** As expected
- **6** Better than expected
- **7** Better than expected

a) Source: Petris Center analysis of CHIS 2001 data.
b) Map shows each county score relative to what would be expected for its population based on its socioeconomic and demographic characteristics.
The formula is: County Score = 5 + (number of "3 star" measures) − (number of "1 star" measures)
c) The five mental health measures used for this score are those calculated from the five questions listed at the beginning of Section II.

Highest Scores - 7 out of 10: Butte, Nevada/Plumas/Sierra, Riverside, Sacramento, San Diego, Siskiyou/Lassen/Trinity/Modoc, and Tuolumne/Calaveras/Amador/Inyo/Mariposa/Mono/Alpine

The above list of counties and county groups shared the highest mental health score: 7 out of 10. Why might these counties have scored higher than other counties? That many of them are located in or around the Northern California Sierras suggests that there may be a factor specific to that area that is important. Yet two urban counties in Southern California, San Diego and Riverside, also scored 7s. Looking at mental health-related resources in these counties (see Table 7), we can see that the concentration of providers is not particularly high – in fact, most of these counties are below the state averages. Butte and Siskiyou/Lassen/Trinity/Modoc have large mental health budgets per capita, but the other counties do not. The reasons for better mental health measures in these counties evidently go beyond that which is easily observed in these statistics; future careful study of the local mental health systems and other local environmental factors in these counties may be revealing.

High Scores - 6 out of 10: Kern, Orange, Placer, Shasta, Sonoma, Sutter & Yuba, Yolo

Counties which scored a 6 (just above the median of 5) include Kern, Orange, Placer, Shasta, Sonoma, Sutter & Yuba, and Yolo. Again, we see a concentration of Northern counties near the Sierras.

Low Scores - 4 out of 10: Mendocino/Lake, San Bernardino, Solano, Stanislaus, and Tulare

Counties with a score of 4 include Mendocino/Lake, San Bernardino, Solano, Stanislaus, and Tulare. Mendocino/Lake has a high rate of people reporting anxiety, and the other four counties have high rates of people reporting a lack of energy. These latter four counties are all located in and around the Central Valley area running north to south through the state, and have low concentrations of mental health providers (see Table 7).

Lowest Scores - 3 out of 10: Alameda and San Francisco

Alameda and San Francisco share the lowest score (3). Both have high adjusted rates of limitations due to emotional problems. These problems exist despite high levels of mental health

providers, particularly in San Francisco. Alameda also has a relatively high mental health budget per capita, while San Francisco's budgetary figure is not available. Both counties contain large, ethnically diverse cities with both affluent and impoverished neighborhoods. It is possible that areas with such a range of constituents have unique mental health needs that are very difficult to meet. It is important to note that CHIS does not include homeless people in the sample; inclusion of the substantial homeless populations in Alameda and San Francisco counties would likely indicate even greater mental health concerns.

Los Angeles

It should also be noted that Los Angeles, although as the reference county it cannot be scored in the same way as other counties, is closer to the high rate end than the low rate end for most of the mental health measures, indicating that it has greater problems than the median county.

RACIAL DIFFERENCES, ADJUSTED BY OTHER SOCIOECONOMIC AND DEMOGRAPHIC CHARACTERISTICS

We can also use our regression results to look at racial differences for the variables discussed in this section. Using the "non-Hispanic white" category as the reference group, we examine racial differences for selected measures after adjusting for other socioeconomic and demographic factors (see Table 5).

Table 5: Racial Differences, Adjusted by Socioeconomic and Demographic Factors

	Did Less than Wanted	**Downhearted and Sad**	**Not Calm or Peaceful**	**Not Energetic**
	Estimate	Estimate	Estimate	Estimate
Racial Group (Baseline: White)				
Latino	*-0.015*	*-0.007*	*0.030*	*-0.012*
Pacific Islander	0.020	0.031	0.058	-0.004
American Indian	*0.087*	*0.016*	*0.043*	*0.036*
Asian	0.008	*0.017*	0.012	*-0.025*
African American	*0.026*	*0.008*	*0.023*	0.013
Other	0.013	0.000	0.021	0.010

Source: Petris Center analysis of CHIS 2001 data.

While American Indians and African Americans report that they did less than they wanted due to emotional problems more often than the white baseline group, Latinos were less likely than whites to report this. Latinos also report that they feel downhearted and sad less than whites, unlike American Indians, Asians and African Americans who report higher rates of these feelings. Latinos, American Indians, and African Americans also report higher rates of feeling not calm or peaceful compared to whites. American Indians also report higher rates than whites of feeling not energetic while Latinos and Asians report lower rates of feeling not energetic when compared with whites.

A subject for future investigation is whether these racial disparities exist in some counties but not in others. Additionally, what have some counties done to ameliorate racial disparities in health, and are these counties faring better in terms of racial differences for mental health? The results here underscore the potential value of research in this area.

IV. ADDITIONAL DATA: UTILIZATION, INSURANCE COVERAGE, PROVIDERS, AND FINANCIAL RESOURCES

This section presents data related to the use and availability of mental health-related resources in counties. First, we focus on utilization: visits to mental health providers, discussion of emotional issues with health care providers, prescription use, and problems with access to mental health care in terms of difficulties and delays in receiving care and unmet need. Second, we examine mental health insurance coverage. Third, we look at the availability of mental health providers and county mental health budgets.

UTILIZATION

Utilization data are shown in Table 6, and are discussed below.

Saw Mental Health Specialist in Past Year: Statewide, 7.6% of adults report having seen a mental health specialist within the past year. The three highest rates are in and around the Bay Area: Marin (14.8%), Santa Cruz (13.3%), and San Francisco (12.6%). Other counties with high rates include Alameda, Humboldt/Del Norte, Napa, and Ventura. Low rates are in Imperial, Kings, Merced, Monterey/San Benito, Riverside, and San Joaquin.

Discussed Mental Health with Medical Professional in Past Year: Statewide, 6.0% answer yes to the question, in the past year did a "doctor or family physician, nurse, chiropractor or other health clinic staff talk to you about emotional or mental health problems?" The counties with high rates include: Humboldt/Del Norte (9.7%), Mendocino/Lake (9.3%), Ventura (9.0%), Santa Cruz (8.7%), and Alameda (8.1%). Low rates are reported in Imperial, Monterey/San Benito, Los Angeles, and Santa Clara.

Took a Prescription for Mental Health: Statewide, 5.7% of adults report taking "any prescription medications, such as an antidepressant or sedative, almost daily (or more often) for two weeks or more, for an emotional or personal problem." The rate is highest in Mendocino/Lake (10.5%). Other counties with high rates are Humboldt/Del Norte, Santa Cruz,

Table 6: Adult Utilization Rates, By County

County	Saw Mental Health Specialist in Past Year	Discussed Mental Health with Medical Professional	Took Prescription for Mental Health	Difficulties or Delays in Getting Mental Health Care	Unmet Mental Health Care Need	ER Care for Mental Health in Last Year
Alameda	*11.5%*	*8.1%*	7.0%	2.2%	7.3%	0.7%
Butte	7.7%	7.2%	7.2%	1.0%	6.4%	0.4%
Contra Costa	7.9%	6.1%	5.2%	1.4%	5.8%	0.2%
El Dorado	8.2%	8.9%	8.2%	2.1%	5.7%	0.5%
Fresno	5.9%	6.2%	6.3%	1.1%	7.3%	1.1%
Humboldt & Del Norte	*11.8%*	*9.7%*	*9.2%*	*2.9%*	5.7%	0.8%
Imperial	*4.2%*	*3.6%*	5.1%	1.4%	7.0%	0.8%
Kern	6.3%	5.4%	6.0%	1.4%	6.2%	0.2%
Kings	*5.2%*	4.9%	4.1%	1.2%	8.7%	1.1%
Los Angeles	6.8%	*5.2%*	*4.8%*	1.3%	*8.0%*	0.4%
Madera	6.5%	5.6%	6.0%	0.9%	6.2%	0.4%
Marin	*14.8%*	7.9%	6.9%	1.7%	5.5%	0.5%
Mendocino & Lake	9.2%	*9.3%*	*10.5%*	1.8%	7.4%	0.9%
Merced	*5.5%*	5.4%	6.7%	1.7%	8.0%	0.4%
Monterey & San Benito	*5.2%*	*4.3%*	5.4%	1.3%	6.6%	0.4%
Napa	*11.3%*	7.5%	7.2%	2.1%	6.9%	0.2%
Nevada, Plumas & Sierra	10.0%	8.7%	7.0%	1.5%	*4.5%*	0.7%
Orange	6.8%	5.1%	*4.4%*	1.0%	7.1%	0.4%
Placer	7.6%	7.0%	6.2%	1.6%	5.4%	*0.0%*
Riverside	*5.2%*	5.1%	5.4%	0.8%	6.1%	0.3%
Sacramento	8.1%	7.9%	6.9%	1.7%	5.4%	0.4%
San Bernardino	6.5%	5.6%	5.6%	1.3%	6.8%	0.8%
San Diego	8.1%	6.6%	6.5%	1.2%	6.1%	0.3%
San Francisco	*12.6%*	7.3%	6.0%	*2.3%*	*8.7%*	0.6%
San Joaquin	*5.2%*	4.7%	5.5%	1.3%	7.9%	0.8%
San Luis Obispo	10.0%	7.4%	7.1%	3.1%	5.4%	0.3%
San Mateo	9.1%	6.3%	6.4%	1.1%	*4.7%*	*0.0%*
Santa Barbara	7.5%	6.3%	5.9%	1.7%	8.2%	0.3%
Santa Clara	6.5%	*4.1%*	4.5%	1.3%	5.8%	0.3%
Santa Cruz	*13.3%*	*8.7%*	*8.3%*	*3.3%*	5.5%	0.3%
Shasta	7.9%	7.3%	7.8%	1.2%	5.2%	1.0%
Siskiyou, Lassen, Trinity &	7.6%	8.0%	7.6%	2.0%	7.5%	1.3%
Solano	7.8%	6.5%	6.3%	1.9%	7.3%	0.2%
Sonoma	9.0%	7.4%	6.3%	1.1%	6.7%	0.2%
Stanislaus	5.7%	7.7%	6.0%	1.5%	5.2%	0.4%
Sutter & Yuba	6.5%	5.0%	5.3%	1.5%	4.9%	0.6%
Tehama, Glenn & Colusa	7.2%	6.9%	*8.6%*	1.3%	6.3%	0.9%
Tulare	5.6%	5.4%	5.8%	0.7%	7.3%	0.3%
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	6.8%	8.0%	6.4%	1.8%	*4.6%*	0.7%
Ventura	*10.4%*	*9.0%*	*8.4%*	1.5%	5.4%	1.1%
Yolo	9.0%	8.7%	6.8%	1.9%	6.0%	1.0%
California Average	7.6%	6.0%	5.7%	1.4%	6.9%	0.5%

Source: Petris Center analysis of CHIS 2001 data.
Note: Differences from state averages at 95 percent confidence level are bolded and italicized.
      Rates of 0.0% represent rates of less than 0.05%.

Tehama/Glenn/Colusa, and Ventura. Counties with low rates are Los Angeles and Orange. Note that this measure of medication use does not include PRN ("pro re nate," or "as needed") medications, CAM medications (complementary or alternative medicines), or over-the-counter medications.

Difficulties/Delays in Getting Mental Health Care: Statewide, 1.4% of adults say they had difficulties or delays in getting mental health care. High rates are in Santa Cruz (3.3%), Humboldt/Del Norte (2.9%), and San Francisco (2.3%). It should be noted that this measure might reflect the degree to which people seek mental health care as much as it reflects the probability of experiencing problems given that they seek care. There are no significantly low rates.

"Unmet" Mental Health Care Need: As noted earlier, we construct a measure of "unmet need" by calculating the proportion of people in each county who: a) said that they needed mental health care in the past year; and b) did not report either seeing a mental health specialist or taking a prescription for mental health problems. The statewide rate is 6.9%. Only two counties are above the statewide average at the 95% confidence level, San Francisco (8.7%) and Los Angeles (8.0%). Three counties have rates below the state average at 95% confidence: Nevada/Plumas/ Sierra, Tuolumne/Calaveras/Amador/Inyo/ Mariposa/Mono/Alpine, and San Mateo.

ER Care for Mental Health: Statewide, only 0.5% of adults report receiving care in an emergency room for emotional or mental health problems. One should keep in mind that CHIS does not include the institutionalized population, in which this rate is likely to be higher. Placer and San Mateo are the only counties with significant rates and both are significantly low with rates less than 0.1%.

INSURANCE COVERAGE

Insurance coverage data are shown in Section II, Table 1 and are discussed below.

Mental Health Insurance Coverage: Statewide, 67.0% of adults report that they have mental health coverage. This measure is undoubtedly subject to some misreporting, as many people answer that they do not know whether they are covered for mental health and many others may answer incorrectly. Comparisons across counties should still be informative, assuming that the reporting incompleteness and error are relatively consistent across counties. The highest rates are in Placer (86.6%), Solano (83.1%), Contra Costa (82.6%), and Marin (81.8%). A number of other counties are also above the state average including Alameda, El Dorado, Sacramento, San Mateo, Santa Clara, Sonoma, and Ventura. The lowest rates are in Tulare, Imperial, Tehama/ Glenn/Colusa, and Los Angeles. Other counties below the state average include Merced and Monterey/San Benito.

PROVIDERS AND COUNTY BUDGET

Next, we examine measures of mental health professional availability, and government funding of mental health services. These data are shown in Table 7. As in the rest of this report, we combine smaller counties into groups in order to be comparable with the CHIS-specified 41 county areas. Note that more detailed data regarding local mental health providers and facilities can be found in a county chartbook prepared by the California Workforce Initiative (2003).

At the national level, there have been dramatic changes in the mental health workforce since the 1970s. In particular, there have been great increases in the supply of social workers and psychologists (Scheffler and Kirby 2003). In terms of California's mental health providers, there is substantial variation across counties. The paragraphs that follow report on the highest and lowest number of specific mental health professionals per 100,000 residents. For many categories of providers, Marin County and San Francisco County have the highest concentrations while the Tehama/Glenn/Colusa county group, Imperial County, Merced County, and Kings County have the lowest.

Table 7: Mental Health Providers and Resources

County	Psychiatrists per 100,000	Psychologists per 100,000	LCSWs per 100,000	MFTs per 100,000	MDs per 100,000	MH Budget per Capita
Alameda	19.78	62.62	69.20	107.84	220.54	$ 90.36
Butte	6.89	19.69	41.34	86.13	188.02	$ 109.32
Contra Costa	14.10	36.99	38.57	95.07	213.32	$ 70.89
El Dorado	9.09	27.51	46.07	79.97	151.63	$ 44.13
Fresno	9.31	22.02	37.78	26.39	163.00	$ 65.51
Humboldt & Del Norte	12.86	21.43	41.55	96.74	207.76	$ 131.93
Imperial	1.12	2.81	6.32	7.73	75.16	$ 61.71
Kern	4.08	9.22	10.58	32.65	125.29	$ 86.43
Kings	1.54	2.32	14.68	10.81	78.02	$ 60.37
Los Angeles	14.79	33.92	38.07	63.55	207.96	$ 81.77
Madera	3.57	12.18	24.37	21.93	87.73	$ 65.95
Marin	62.76	145.98	119.29	341.71	460.19	$ 77.96
Mendocino & Lake	7.47	22.13	47.73	85.08	169.46	$ 101.47
Merced	3.04	3.32	13.77	13.77	95.94	$ 69.14
Monterey & San Benito	8.22	17.36	27.69	50.99	150.99	$ 54.78
Napa	43.61	69.20	91.73	89.32	300.94	$ 88.75
Nevada, Plumas & Sierra	10.14	26.63	50.68	109.10	193.28	$ 65.33
Orange	13.65	34.15	33.87	73.78	236.62	$ 30.95
Placer	10.55	22.95	50.72	63.20	240.74	$ 58.34
Riverside	5.29	12.42	20.45	37.47	119.32	$ 40.37
Sacramento	11.62	24.93	54.92	5.39	197.71	$ 16.21
San Bernardino	8.10	14.45	24.04	36.04	141.51	$ 44.18
San Diego	15.61	42.93	46.88	61.34	234.38	$ 56.86
San Francisco	55.90	90.76	101.06	116.90	445.33	not available
San Joaquin	4.86	9.40	20.76	20.40	132.36	$ 88.18
San Luis Obispo	30.16	59.19	64.46	116.34	242.01	$ 65.36
San Mateo	25.23	41.72	46.24	83.57	272.07	$ 93.58
Santa Barbara	15.53	45.32	33.81	126.96	235.13	$ 90.96
Santa Clara	16.57	32.98	40.35	75.66	245.28	$ 83.60
Santa Cruz	17.21	44.99	74.33	188.57	223.00	$ 140.28
Shasta	8.09	20.21	39.20	51.45	237.05	$ 86.65
Siskiyou, Lassen, Trinity & Modoc	3.58	15.90	25.84	54.67	113.32	$ 99.98
Solano	9.73	16.98	34.72	39.54	160.95	$ 75.20
Sonoma	14.74	47.53	66.50	177.27	227.86	$ 63.28
Stanislaus	5.41	12.53	15.44	38.93	144.97	$ 102.56
Sutter & Yuba	8.77	4.31	17.25	24.43	169.60	not available
Tehama, Glenn & Colusa	3.36	1.97	11.85	20.73	67.13	$ 91.76
Tulare	4.02	13.04	27.72	24.46	111.13	$ 79.35
Tuolumne, Calaveras, Amador, Inyo, Mariposa, Mono & Alpine	8.92	18.96	31.23	60.80	136.09	$ 68.22
Ventura	11.18	30.67	39.70	94.00	182.29	$ 45.69
Yolo	28.70	48.62	54.55	61.07	275.11	not available
California Average	14.47	33.30	40.50	68.67	206.24	$ 65.87

Source: Petris Center analysis of data from the AMA Masterfile, California Department of Consumer Affairs, and the California State Controller's Office.

Measuring Mental Health in California's Counties

Psychiatrists: The American Medical Association provides information on the number of psychiatrists in each county, through the 2001 AMA Masterfile. Statewide, there is an average of 14 psychiatrists per 100,000 people. Marin has the highest ratio with 63 psychiatrists per 100,000, followed closely by San Francisco with 56 per 100,000. At the other end of the spectrum, Imperial and Kings counties have less than two psychiatrists per 100,000 residents.

Psychologists: Statewide, there is an average of 33 psychologists per 100,000 residents. Marin has the highest proportion of psychologists by far with 146 psychologists per 100,000 residents followed by San Francisco with 91. The counties with the lowest ratios of psychologists (fewer than four per 100,000) are Tehama/Glenn/Colusa, Kings, Imperial, and Merced. These data are provided by the California Department of Consumer Affairs (CA DCA).

Licensed Clinical Social Workers: Statewide, there are 40 licensed clinical social workers (LCSWs) per 100,000. As with psychiatrists and psychologists, Marin leads in the proportion of LCSWs with 119 per 100,000 and San Francisco County following at 101. Imperial had the lowest rate with 6 LCSWs per 100,000, followed by Kern and Tehama/Glenn/Colusa at less than 12 (Source: CA DCA).

Marriage and Family Therapists: The statewide average is 69 marriage and family therapists (MFTs) per 100,000. Again, Marin stands out as having a particularly high ratio with 342 per 100,000 residents. The next highest ratio is 189 for Santa Cruz, followed by Sonoma at 177. Unlike the previous types of mental health professionals, in this category the lowest ratio is for Sacramento with 5 MFTs per 100,000. Imperial is the next lowest with a ratio of 8 (Source: CA DCA).

Physicians: Information on physicians was obtained through the 2001 American Medical Association Masterfile. For medical doctors (MDs), the statewide ratio is 206 physicians per 100,000. When looking at the highest and lowest ratios, some of the same counties appear as with the measures of psychiatrists and Licensed Mental Health Professionals in general. Marin again has the highest ratio with 460 MDs per 100,000. San Francisco and Napa counties also

have particularly high ratios. Tehama/Glenn/Colusa has the lowest ratio with 67 MDs per 100,000 while Imperial, Kings, and Madera also have low ratios.

Mental Health Funding: The California State Controller's Office publishes an annual report of the fiscal functions of California counties based on required reports filed by each county.[6] We examine the county mental health budget as reported for Fiscal Year 2000-2001. We create ratios of county mental health spending per capita. Note these numbers do not include other major funding sources for mental health services such as Medicare, Medicaid, and private health insurance.

County Mental Health Budgets - The statewide average for the mental health budget per capita for FY 2000-2001 is $66. The highest ratio of dollars per population is in Santa Cruz at $140 per capita. Other counties with over $100 per capita in their mental health budget include Butte, Humboldt/Del Norte, Mendocino/Lake, and Stanislaus. Sacramento has the lowest ratio of $16 per capita. The next lowest ratio is in Orange with $31 per capita, followed by $40 in Riverside.

---

[6] San Francisco County and City file their reports jointly and therefore are treated separately from the other counties. Additionally, not all counties report these measures.

V. DISCUSSION AND POLICY LESSONS

We believe that the results in this study will be useful to policymakers and other decision-makers working to improve the mental health of California and its communities. In particular, we would like to suggest the following four lessons stemming from this report:

First, the CHIS data affirm that mental health is a concept that goes beyond clinical diagnoses. Efforts to improve mental health should not be limited solely to those persons affected by what is typically referred to as "serious mental illness" (SMI). Within the general population, there exists a substantial heterogeneity across counties and across individuals in how people respond to survey questions related to their mental health. The type of data presented here may be useful in developing a more global, public health approach to complement the increasingly medicalized and specialized approaches that are typically associated with treatment of the SMI population.

Second, the results provided in this report show that the county variation in self-reported mental health cannot be fully explained by demographic and socioeconomic characteristics such as age, gender, race, education, and income. The variation in mental health-related measures remaining after adjusting for these basic population characteristics suggests it would be worthwhile to understand more about these differences. We should also continue to ask why differentials across races exist - to what extent do they reflect health disparities and to what extent might they reflect different cultural understandings of mental health and the survey questions attempting to measure it?

Third, our study suggests that these differences in mental health indicators are not related to basic population characteristics. Further study of counties on the high and low ends of mental health scores in our report may be revealing in a number of ways. Possibilities include potentially important factors for which adequate data do not currently exist at local population levels: for example, the extent of private financing of mental health, and the type of management and organization of local delivery systems. These factors warrant further study.

Fourth, raw differences in mental health-related indicators across counties (without adjusting for socioeconomic and demographic characteristics) are also substantial and merit attention. The focus of this report has been on the rates adjusted for population characteristics because they inform us of the way in which counties differ in mental health beyond the traditional socio-economic and demographic explanations. Yet it is important to keep in mind that raw differences in mental health-related indicators, regardless of their causes, merit attention from policymakers.

It is important to recognize the limitations in the scope of our study. Most notably, CHIS data do not include information on homeless or institutionalized people, and the measures of mental health are relatively limited in both number and detail. Nevertheless, we feel this research will serve as a starting point for a better understanding of population level mental health in California.

This report, even with its limitations, may be able to serve as a starting point for a comprehensive assessment of the mental health status of all Californians and point to lessons that, when understood, can improve the prevention and treatment of mental health problems.

VI. TECHNICAL ISSUES

i. Precision of Estimates

Throughout this report we note which county estimated rates are significantly different from a reference rate (LA's in the case of the adjusted rates in our main results in Section III, and statewide in the case of simple unadjusted rates presented in other sections) at the 95 percent confidence level. We refer to county rates as "low" or "high" only when they are significantly below or above the reference rate at the 95 percent confidence level. One should keep in mind that counties with greater sample sizes (generally larger counties) are more likely to be different from the reference rate at the 95 percent confidence level simply because these estimates are more precise. In other words, a large county's rate could be closer to the statewide rate than a smaller county's rate but could be determined statistically different from the statewide rate while the smaller county's rate is not due to the small number of observations. Fortunately, this problem is minimal in CHIS because most counties (or county groups) have comparable sample sizes.

It is also important to keep in mind that a "statistically significant" difference is not equivalent to a "magnitude of difference that is important from a clinical or policy perspective." Evaluating the policy and clinical importance is a separate issue.

ii. Methodology for Adjusted Rates

To arrive at the adjusted differences, we perform individual level probit regressions of the following form:

$$p(MH_{i,c} = 1) = \Phi(B_0 + B_1 X_{i,c} + C_i + E_{i,c})$$

The subscript i denotes an individual, and the subscript c denotes a county. $MH_{i,c}$ is a binary mental health indicator, B_0 is a constant term, $X_{i,c}$ is a vector of socioeconomic and demographic characteristics, C_i is a vector of county dummy variables, and $E_{i,c}$ is the error term. The

socioeconomic and demographic variables are the following: gender (female dummy), household income, household income squared, high school graduate dummy, college graduate dummy, age interval dummies (18-24 and five year intervals thereafter – 25-39; 30-34; 35-39; etc), and race dummies (Asian, Pacific Islander, American Indian, Latino, Black, White, and Other/Multi). We choose Los Angeles to be the baseline county in these regressions and therefore omit its dummy variable from the regression. We make this choice because it is the largest county and its unadjusted values for most measures (see Table 1) are relatively close to the state averages. It is important to note that the choice of the baseline county does not alter the statistical findings, in terms of county rankings. The coefficients reported in tables are scaled (using Stata's "dprobit" command) so that they represent predicted changes in probability, on a scale from 0 to 1 (so a coefficient of, say, 0.05, implies a five percent change in probability). The statistical significance of the coefficients accounts for the complex survey design of the CHIS including probability weighting, stratification, and clustering (using Stata's "svyprobit" command).

iii. Notes about the CHIS Mental Health Measures Derived from the SF-12

As we state in the report, the SF-12 is not a diagnostic tool, but rather a survey instrument used to capture ones' self assessment of their health status (as opposed to diagnoses made by clinicians). The mental health measures we examine in CHIS are adapted from SF-12 survey questions (the most notable difference is that CHIS uses slightly different response categories).

One good resource explaining the development and nuances of the SF-36 (the long form) and its subsequent shorter version the SF-12 is www.sf-36.org.

The SF-36 and SF-12 are used to measure "health-related quality of life" or HRQOL. HRQOL is used often as an outcome measure of health services, including those for mental health. The SF-36 looks at 8 domains of health including: general health, physical functioning, social functioning, role physical, role emotional, mental health, vitality, and bodily pain. These can further break down into the mental component summary (MCS) and the physical component summary (PCS).

The SF-12 is a shorter version that captures the same basic information, for the most part. While it is not used to diagnose individuals, the SF-12 is frequently used to look at people with specific diagnoses and gauge their improvement. The SF-12 has been tested on patients with varied clinical diagnoses to determine validity and reliability (e.g. spinal cord injuries, AIDS, stroke). Salyers et al (2000) found the SF-12 to be a good instrument to measure HRQOL for people with SMI diagnoses. Lenert et al (2000) found that it was possible to use the SF-12 scales to assess utilities for changes in health status associated with a clinical change in depression. Some research has shown that the SF-12 is valid in a variety of populations. For example, Franks et al (2003) found that the SF-12 mapped to other similar scales (EQ-5D and HUI3) in a low-income minority population in New York. However, it is important to note that the results of the SF-12 (or SF-36) can be culturally biased. This could affect the results presented in this report, particularly in counties with large minority populations who speak languages other then English (e.g., Abbot et al 2001).

REFERENCES

Abbott, J., Baumann, U., Conway S., Etherington, C., Gee. L. von der Schulenburg. J.M.G., and Webb, K. (2001) "Cross Cultural Differences in Health Related Quality of Life in Adolescents with Cystic Fibrosis." Disability & Rehabilitation 23(18): 837-844.

California Healthcare Foundation (2000) (prepared by Suzanne Gelber, Ph.D., Bruce Gorman, M.C.R.P., Richard Mockler, M.P.P., David Rinaldo, Ph.D.), The State of the State of Behavioral Health in California: Alcohol, Drug, and Mental Health Services and Systems.

California Mental Health Planning Council (2003), California Mental Health Master Plan: A Vision for California, Sacramento.

California Workforce Initiative at the UCSF Center for the Health Professions (2003) (compiled by Tina McRee), Chartbook: Resources for mental and behavioral health care in California's counties, A supplement to the report "The Mental Health Workforce: Who's Meeting California's Needs?"

California Workforce Initiative at the UCSF Center for the Health Professions (2003) (funded by the California HealthCare Foundation and The California Endowment, and prepared by Tina McRee MA, Catherine Dower JD, Bram Briggance MA, Jenny Vance, Dennis Keane MPH, Edward H. O'Neil, PhD). THE MENTAL HEALTH WORKFORCE: Who's Meeting California's Needs?

Franks, P., Lubetkin, E.I, Gold, M.R., and Tancredi, D.J. (2003) "Mapping the SF-12 to Preference-Based Instruments: Convergent Validity in a Low-Income, Minority Population." Medical Care 41(11):1277-1283.

Lenert, L.A., Sherbourne, C.D., Sugar, C., and Wells, K.B. (2000). "Estimation of Utilities for the Effects of Depression from the SF-12." Medical Care 38(7):763-770.

Salyers, M.P., Bosworth, H.B., Swanson, J.W., et al. (2000). "Reliability and Validity of the SF-12 Health Survey Among People with Severe Mental Illness." Medical Care 38(11)1141-1150.

Scheffler, R.M. and Kirby, P.B. (2003) "The Occupational Transformation of the Mental Health System." *Health Affairs* 22(5):177-188.

Ware JE, Kosinski M, and Keller SD. A 12-Item Short-Form Health Survey: Construction of scales and preliminary tests of reliability and validity. Medical Care, 1996;34(3):220-233.

World Health Organization. Global Burden of Disease. http://www.who.int/msa/mnh/ems/dalys/intro.htm.