

Using Geographic Information Systems (GIS) to Understand Mental Health Needs, Utilization and Access within a Social Context in California and in Three Selected Counties

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Prepared by
Marlene M. von Friederichs-Fitzwater, PhD., MPH
Assistant Professor of Hematology & Oncology
UC Davis School of Medicine
Director, Outreach Research & Education Program
UC Davis Cancer Center

Estella M. Geraghty, MD, MS, MPH
Assistant Professor of Clinical Internal Medicine
UC Davis School of Medicine

Sergio Aguilar-Gaxiola, MD, PhD
Professor of Clinical Internal Medicine
Director, Center for Reducing Health Disparities
UC Davis School of Medicine

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I. INTRODUCTION

Mental health disorders are among the most common causes of disability.^{i ii} The resulting disease burden of mental illness is among the highest of all diseases and has significant economic and social repercussions.ⁱⁱⁱ In recent years, new mental health issues have emerged among some special populations, such as veterans who have experienced physical and mental trauma and older adults, as the understanding and treatment of dementia and mood disorders continues to increase. With more veterans returning from war in the middle East and an increasing aging population, the need for mental health care will dramatically increase while access to care is expected to decline due to the national and California economic crisis. The State of California is committed to providing high-quality mental health care that promotes hope and recovery for California's Medi-Cal population with psychiatric disabilities. To better understand the mental health needs, access and utilization for California, this report provides an interpretation of the geographic analysis and mapping results of access and utilization of mental health services and provides overall major areas of focus as well as recommendations. After the state-wide geographic interpretation, we focus on three counties, Stanislaus, Santa Clara and Orange and start by looking at the social context and social determinants of each county. Orange County was ultimately unable to provide our team with their data and was, therefore, excluded from detailed geographic analysis.

II. STATE-WIDE ACCESS AND UTILIZATION OF MENTAL HEALTH SERVICES BY COUNTY

Children and youth on Medi-Cal in California often use mental health services for Serious Emotional Disturbances (SED). The following summarizes Medi-Cal beneficiaries' access and utilization of mental health services in California by youth, ages 12-17 with SED.

- a. Youth Ages 12-17 with Serious Emotional Disturbance (SED): Stanislaus County has access equivalent to the state mean, but utilization is the highest in the state, suggesting potentially individuals with more mental health needs. Sonoma County has high access, but the lowest utilization in the state, suggesting that more services are needed.
- b. Male Beneficiaries: Male beneficiaries in Stanislaus County have the highest utilization rate in the state with relatively high access and in Santa Clara men have low access and utilization, suggesting that more services might be needed.

- c. Female Beneficiaries: Female beneficiaries in Siskiyou have the highest access rate, but utilization is equivalent to the state mean; in Stanislaus County, utilization is the highest in the state, but access is equivalent to the state mean.
- d. African American Beneficiaries: African American beneficiaries in San Francisco County have the highest access rate in the state, but with low utilization.
- e. Hispanic Beneficiaries: Hispanic beneficiaries in Merced County have the highest utilization rate in the state, whereas access is equivalent to the state mean; and the highest access rate in the state in Mariposa, but utilization is equivalent to the state mean.
- f. Asian/Pacific Islander: Asian/Pacific Islander beneficiaries in San Francisco have the highest access rate in the state with the lowest utilization rate.
- g. Native American/Alaskan Native: NA/ANs have the highest access rates in the state in Imperial, Kings, Mariposa and Modoc counties with utilization equivalent to the state mean in all but Kings County, which has high utilization rates. High access and utilization may suggest overuse of services.
- h. White: White beneficiaries have the highest access rate in the state in Mono County with utilization rates equivalent to the state mean.

The following summarizes access and utilization of mental health services by adult age groups of Medi-Cal beneficiaries for individuals with SMI.

- a. 18-24 years of age: Sierra County had the highest access rate with a utilization rate equivalent to the state mean; Stanislaus County had the highest utilization rate with an access rate equivalent to the state mean/ Riverside and Los Angeles counties had low access and utilization rates. Alameda, Butte, San Diego, and Shasta counties had high utilization and access rates, which may suggest potential overuse of services.
- b. 25-44 years of age: San Francisco County had the highest access rate with a low utilization rate, followed closely by San Diego County; San Luis Obispo, Santa Barbara, Shasta and Monterey counties had high access and high utilization; Santa Clara, Los Angeles and Orange counties had low access and utilization rates.

- c. 45-54 years of age: Kern, Merced, Monterey, Plumas, San Diego, San Mateo, Santa Barbara, and Shasta counties have high access and utilization rates; Santa Clara county had low access and utilization rates.
- d. 55-64 years of age: Monterey, San Diego, Santa Barbara and Tulare counties have the highest access and utilization rates; San Joaquin and Santa Clara counties have the lowest access and utilization rates for this age group.

The “hot spot” mapping included in other deliverables provides additional visual information on access and utilization for census tracts within counties in California. The following section reports the GIS mapping results within a social context.

III. SOCIAL DETERMINANTS RELATED TO HEALTH STATUS

According to the World Health Organization, social determinants of health “are the conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the distribution of money, power, and resources at global, national and local levels, which are themselves influenced by policy choices.” These underlying social and economic factors cluster and accumulate over one’s life, and influence health inequities across different populations and places.

Health inequities or disparities are the avoidable inequalities in health outcomes. The effect of social and economic conditions on individuals’ lives contribute to their risk for illness and the actions they take to prevent and treat illness.

This report examines the following social determinants of health:

- Non-English-speaking
- Income and poverty
- Unemployment
- Insurance

Table 1 provides this information (2005 data) for Stanislaus, Santa Clara, and Orange Counties.

Table 1

County	Population	Living Below Poverty Level	% non-English-speaking Households	Unemployment	Household Ownership	Median Household Income	Uninsured All or Part of Year
Stanislaus County	510,385	14%	32.4%	11%	61.9%	\$50,094	83,000
Orange County	3,026,786	9.9%	41.4%	9.1%	61.4%	74,862	579,000
Santa Clara County	1,784,642	7.6%	45.4%	10.6%	59.8%	\$88,525	187,000

(California Health Interview Survey, UCLA Center for Health Policy Research, 2005)

Stanislaus County has the highest poverty and unemployment rate and the lowest median household income of the three counties examined in this study. Stanislaus also has one of the highest utilization of mental services by youth (ages 12-17) in the state with access equivalent to the state mean. This high utilization rate might suggest individuals with greater need for services. Santa Clara County, the sixth largest county by population in the state, has the highest percentage of non-English-speaking households and highest median household income of the three counties. Orange County has the highest number of uninsured children and adults.

The following section provides a health assessment of Stanislaus, Santa Clara, and Orange Counties.

Stanislaus County Health Assessment

Stanislaus County is located in the northern half of the San Joaquin Valley. The leading agricultural products include livestock and livestock products, fruits and nuts, poultry and poultry products, and field crops.^{iv} Stanislaus County’s unemployment rate of 11% and an almost 180% increase in notices of housing defaults in the past year reflect the economic problems that challenge the entire state.^v

In 2007, 18% of individuals less than 18 years of age, in Stanislaus County, and 17% in California, were living below the federal poverty level. In 2007, 12% of individuals between the ages of 18 to 64, and 9% of those 65 years or older, were living in poverty in Stanislaus County. For Stanislaus County population overall, 14% were living in poverty in 2007. In 2009, 68% of the homeless were male, 30% were female and 2% were transgender and 47% of the homeless reported at least one mental health issue and 41% reported substance abuse issues.^{vi}

Forty-two percent (42%) of respondents said that they or their family had to go without basic needs during the past 12 months. Of those that had to go without basic needs, half of respondents (50%) went without “clothing.” Among some of the other responses given, 49% said that their “food choices were limited,” 41% went without “health care,” 37% went without “dental care” and “food,” 27% went without “rent/housing,” 21% went without “prescriptions,” and 11% went without “child care.”^{vii}

These demographics provide a context for the highest utilization of mental health services by youth – 18% of individuals less than 18 years of age are living below the federal poverty level and high unemployment rates generally impact young people who are both unable to find weekend and summer work and who may foresee a dismal future in terms of future employment.^{viii}

In 2010, more than 90,000 people were uninsured in Stanislaus County, including a quarter of all adults, ages 18-64, according to the most recent census data. An additional 105,000 low-income residents are enrolled in the state’s Medi-Cal program. While the entire state is suffering due to a national economic crisis, counties in the Central valley – including Stanislaus – have been hit particularly hard. In the past five years, applications to the county’s Indigent Adult Health Services program for the uninsured rose more than 40 percent, pushing the patient count from 5,953 in 2006 to 7,829 in 2010 – a 32% increase in four years. During that same period, funding for the program dropped from \$14.4 million to \$12.6 million. In July 2009, some 55,000 Stanislaus County adults on Medi-Cal saw their dental, podiatry, psychology and other “optional” benefits were eliminated. County Behavioral Health and Recovery Services, which oversees mental health and drug and alcohol services, closed three mental health clinics five years ago and in the past three years, lost almost 200 employees – nearly 40% of its staff.^{ix}

Boys and girls in Stanislaus County also have the highest utilization percentages in the state with access equivalent to the state mean for girls and moderate access for boys. Such high utilization rates suggest sicker individuals, undoubtedly impacted by poverty and unemployment. With continued cuts in services, these individuals are more likely to show up in emergency rooms.^x

Santa Clara County Health Assessment

Santa Clara County is one of the largest counties in the state, following Los Angeles, San Diego and Orange Counties, and the largest of the nine Bay Area counties. Santa Clara County is ethnically and

linguistically diverse, with over 100 languages and dialects spoken. Immigrants constitute a third of the County's population. In 2005, Caucasians, Asians and Hispanics were the largest racial and ethnic groups in Santa Clara County (39%, 30%, and 25%, respectively), followed by African Americans (2%), Native Hawaiians (0.4%), American Indians/Alaskan Natives (0.3%), and Other (3%). In 2020, the racial and ethnic groups with the largest percentage of growth are expected to be Hispanics (49%), American Indians (45%), and Asians (30%). Santa Clara County is a diverse community and one of the largest counties in the nation where minority populations are the majority. ^{xi}

Nationwide, non-citizen immigrants are more than three times as likely to be uninsured (44%) as native-born citizens (13%) in the United States. Because immigrants are so often uninsured, out-of-pocket health care costs are higher than those paid by the insured, making immigrants less able to pay for the care they need. Other factors, like language barriers, also impair immigrants' access to and the quality of care they receive. In Santa Clara County, about one in three Hispanics (32%), 18-24 year olds (32%), and households with income levels of less than \$25,000 annually (32%) did not have health care coverage. Similarly, four in ten individuals with less than a high school degree (40%) did not have health care coverage. These same groups did not see a health care provider or doctor when needed due to costs. ^{xii}

In 2005, 18% of adults in Santa Clara County needed help for emotional or mental health problems in the past 12 months, as compared to 19% of adults in California. Eight percent of Santa Clara County seniors and 9% of California seniors reported that they had needed help for emotional or mental health problems in the past 12 months. ^{xiii}

Despite these reports, access and utilization to mental health services in Santa Clara by Medi-Cal beneficiaries was consistently low across all categories (age and race/ethnicity). Low access and utilization suggests more services are needed. ^{xiv}

Orange County Health Assessment

Orange County has 3,002,048 residents, representing 4.1% of the state's population, with Hispanics comprising nearly a third at 32.9%. About 21.3% of the County's non-elderly population and 12.0% of the children do not have health insurance. Orange County's safety net serves 3.1 million County

residents, 500,000 of whom are uninsured with 140,000 eligible for services (as of June 11, 2010). The majority (56.2%) of Medi-Cal enrollees are Hispanic. Asian/Pacific Islanders comprise another 18.7% of enrollees while Whites make up 16.9%.^{xv}

Medi-Cal access and utilization data specific to Orange County shows that approximately one in five adults report having at least one poor mental health day in the previous 30 days in Orange County. In May of 2010, 6.8% (158,971) of adults reported that they were diagnosed with emotional, mental, or behavioral health disorders by a doctor or other health care provider in the County.^{xvi}

Of those 6.8% of Orange County adults, 49.4% were diagnosed with depression (major and chronic), 16.5% were diagnosed with anxiety disorders, 6.7% were diagnosed with bipolar disorder, and 2.5% were diagnosed with schizophrenia. Also, 26.3% (69,560) of adults who were told by a doctor that they had a disorder or that they should seek professional mental health did not receive treatment or counseling. In Orange County, women were one and a half times more likely to be told by a doctor that they had a mental health problem. Table 2 shows the specific diagnosis of those 6.8% adults.^{xvii}

Table 2

Type of Disorder	Percentage	Population Estimate
Depression (Major and Chronic)	49.4%	68,228
Anxiety Disorders	16.5%	22,775
Bipolar Disorder	6.7%	9,190
Schizophrenia	2.5%	3,397

Although Vietnamese comprised only 5.3% of the total Orange County population as of 2008, they are the largest Vietnamese community in the United States -- 15% (19,508) of Vietnamese adults in Orange County report no health care coverage. Only 8.3% of Vietnamese adults 18 and older reported their health as excellent in the 2007 OCHNA survey.^{xviii} 29.9% (38,517) of Vietnamese adults stated they did have an ongoing or serious health condition requiring care; 94% (94.2%) of Vietnamese children have health care coverage. Almost half (48.2%) of Vietnamese children's health care coverage is through government plans, such as Medi-Cal and Health Families.^{xix}

Access to mental health services in Orange County (via the statewide analysis) is consistently low

across all categories of age and race/ethnicity, except among Whites who had high access and utilization, which suggests potential overuse of mental health services by Whites.^{xx}

IV. AREAS OF FOCUS & RECOMMENDATIONS

The main areas of focus in this project are:

Access and utilization of mental health services in California vary by county and appear to be associated with social determinants such as low income, unemployment and lack of insurance. It appears that speaking English may be also associated and this is a potential for future study.

Census tract level data allows for a community level analysis to be performed and studied within the social context of that county (unemployment rates, level of poverty, number of people who are uninsured, etc.). This might be considered an ideal geographic level for understanding health disparities in this population since it is said that census tracts mimic neighborhoods in their homogeneity. The “hot spot” maps provide an opportunity to look at patterns within the state (still analyzed at the community level) in which statistically significant clusters of high and low access and utilization of mental health care services exists.

In addition to the recommendations made in Deliverables 1 and 2, we also recommend:

1. **Goals, standards, measurements, and assessments of the County mental health program and Mental Health Services Act (MHSA) programs should be made in reference to specific target populations defined by residential status.** Surveys of mental health need, such as California Health Interview Survey (CHIS), only cover the population of persons living in households. However, delivery of services provided by the County mental health program covers not only persons living in households but those living in group quarters and care facilities and those who are homeless or transient. Reporting outcomes separately for different target populations would greatly increase knowledge about mental health need and services in the state. Including these individuals in survey mechanisms and geocoding them will be an integral part of this recommendation.
2. **Multiple MHSA programs should be funded that take different approaches to the same problem, but it is imperative for the programs to collect the same outcome measures and be evaluated in a**

similar manner. With this strategy, MHSA monies would be used to find out what works and what doesn't. Such an approach to funding has the potential to yield the most "bang for the buck"—a multiplier effect in which funding innovative small, local programs leads to improvements in programs statewide.

3. Include a component of "need" in defining access as described in Deliverable #3. This would allow better identification of "hot spots" in terms of needs as well as access and utilization.

4. Develop an interoperability infrastructure including the creation of health information exchanges and regional health information organizations among the counties. This would allow counties to share information on mental health care access, utilization and needs for better planning within counties, regions and statewide.

5. Conduct a more in-depth analyses of the geographic analysis and mapping within the social context including the impact of social/cultural/behavioral determinants on mental health. For example, identify behaviors that may be linked to mental health issues such as the relationship of obesity to depression and anxiety. Orange County determined that over three-quarters of those suffering from a mental health condition in the county were also overweight or obese.⁶

6. Examine innovative ways to develop transdisciplinary approaches, including community engagement, to address the mental health needs in those counties with highest utilization rates to fill gaps created by continued budget cuts in state, county and city budgets.

7. Consider the notion of temporality. While a cross-sectional analysis, such as this one, is useful, annualized data that begins to show change and trends that may correspond to changes in social determinants may be very useful. There is a particular opportunity to better understand issues like income, unemployment and insurance status, for example, with the economic downturn of the last few years.

8. Include an analysis at the provider level in the next study. While insurance is an important predictor of access, so is the location of specialty service providers. Perhaps identification of areas with greater need could facilitate implementation of telemedicine services to those areas or incentives for providers to practice there.

V. CHALLENGES ENCOUNTERED IN COMPLETING THE PROJECT

- Geocoding of non-standardized addresses (as noted in Deliverable #2)
- Conceptualization of "access to care" (as discussed in Deliverable #1)

- Obtaining geographic data (in general) since address data is considered protected health information and counties could not provide census tract level data that would obscure the addresses. Obtaining data (specifically) from Orange County who was unable to approve the process through their IRB.

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