2019

Compass Health Network

Needs Assessment

March 2019

Acknowledgements

The 2019 Compass Health Network Needs Assessment would not be possible without the kind assistance and consultation of many contributors and stakeholders.

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- All stakeholders, internal and external to Compass, who responded to surveys, focus groups, and other requests, and who showed enthusiasm for the work here presented.

Paul Thomlinson, Ph.D., Executive Director—Compass Health Research Institute
Peter Lyskowski, Vice President—Strategy & Planning

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Abstract

The 2019 Compass Health Network Needs Assessment represents the culmination of a systematic 4-month process of ***reviewing the health issues and other needs present in the populations we serve, leading to agreed strategic priorities that will improve health and reduce inequities***. The needs assessment process included systematic collection and analysis of a wide range of primary and secondary data, both qualitative and quantitative in nature.

Analysis of ***sociodemographic and health status indicators*** revealed that two Department of Mental Health Service Areas stand out for their exceptionally poor health outcomes: 8B and 17B. Both regions have similar demographics as other regions, but much worse outcomes. For example, regions 17A and 17B, which are geographically contiguous, have similar risk factors, but 17B is more affected and coping less effectively. Premature death is an issue in 8B, but spikes even higher in 17B. Both are exceptionally lacking in access to clinical care and have the highest health care costs of all the regions studied.

Estimates of the ***prevalence and costs of untreated mental illness*** in the Compass service area revealed that untreated anxiety disorder (59,207 adults) and major depressive disorder (37,810 adults) are the largest needs, and that the cumulative cost of untreated mental illness is over $765 million. It follows that by providing effective outreach, engagement and treatment that reduces untreated mental illness by even 20%, Compass Health could help return approximately $150 million to the Missouri economy. Other deleterious consequences of untreated mental illness in the overall Compass service area are 85 suicides, 14,129 incarcerations, and 18,626 unemployed adults.

A ***survey of Compass executives, directors, and supervisors*** indicated the service line showing the greatest need is mental health/psychiatry by a substantial margin, followed by substance use treatment, oral dental care, and primary care. When asked the most important future directions Compass should take, the following were suggested (each by at least 10 respondents): (1) A need to need to expand services, (2) Additional staff to meet consumer need, (3) A need to identify and implement methods to increase efficiency, (4) Considering alternative approaches to increase care and/or the coordination of care, (5) The growing need for additional space and/or locations was suggested, (6) Increase community outreach endeavors, and (7) Need to provide additional training/tools/education to staff.

Three ***focus groups with customers with serious mental illness*** yielded a few consistent themes: (1) transportation is seen as the most consistent barrier to care, especially in rural areas, (2) more education is needed for staff, the community, other providers, and the customers themselves regarding mental illness and stigma reduction efforts. A structured survey of unmet needs among these customers revealed the following as the most common: (1) Intimate relationships and the related area of sexual expression, (2) transportation, (3) benefits assistance, (4) company, or socialization, (5) psychological distress, or feeling sad or low recently, (6) help with money and finances management, and (7) physical health problems. Continuing with the voice of customers, ***Compass's survey assessing customer experiences with primary care and dental clinics*** shows that unmet dental needs remain among respondents in substantially higher numbers than unmet primary care/medical needs.

Community stakeholder groups were consulted about community needs, and they indicated that primary care services in the SW/NW region were most available/sufficient, and the clearest ratings of need were: (1) dental and substance use disorder (SUD) treatment services in the Southeast, and (2) SUD and dental treatment in the Eastern region.

A review and ***compilation of the prioritized health needs*** of over 20 non-profit hospital community health needs assessments serving the Compass region revealed the following results, which line up very well with the needs identified in the other analyses thus far: (1) substance use issues, (2) healthcare transportation, (3) shortage of medical professionals/access to care, (4) health literacy/education, (5) dental care, (6) obesity, and (7) mental health care.

Following an inventorying of the Compass staffing, resources, facilities, and revenues across regions, the needs assessment concludes with ***identification and validation of cross-cutting themes and priorities for strategic planning***. These identified needs are as follows:

- SUD treatment needs in parts of the Eastern region, coupled with limited available services reveals an important gap.
- A great need for counseling services appears evident, with customers expressing strong desire for more time with their psychiatrists, but what they really seem to need is someone to talk to without the relatively stricter time constraints often inherent in psychiatric visits. Identified barriers were lack of insurance, and cost of service.
- Transportation, both generally and to facilitate appointment keeping, is a nearly ubiquitous issue, especially in rural areas, but is evident even in the more urban areas.
- Stigma and negative attitudes toward those with SUD and mental illness are a clearly emergent theme supported by the evidence. This should be taken seriously as a strategic priority for the organization to the extent that individuals are not accessing services because stigma is such a tall barrier.
- Dental care access is a very significant issue. Focus groups showed that many have a dentist and of course some do not, but even among those who do, many are afraid to go. Untreated oral health issues also exacerbate mental illness symptoms and functioning; and dental needs are particularly acute in our rural areas.
- Our customers experience significant unmet needs in the area of developing and maintaining close, intimate, supportive relationships. This also relates to and interweaves with other needs mentioned: psychological distress can be alleviated through close, nourishing personal and social relationships as well as professional counseling relationships.
- Customers with serious mental illness report unmet need for more help and education about how to manage money and feel more in control of finances, as well as help with benefits.
- We should celebrate the effectiveness with which we help customers meet their physical health care needs, as nearly all focus group participants indicated they had a regular doctor and could get appointments reasonably quickly and easily (but transportation to the appointments is a barrier).
- If we are to look for the areas of greatest unmet need according to our indicators, we should look at DMH SA8B and SA17B. There are tremendous problems relating to longevity and quality of life, they have the highest health care costs, and more disabled veterans, of all regions.

As a final step, the above findings were presented to the large staff management meeting (with approximately 150 attendees), and attendees were asked in an interactive real-time exercise to rate each of the identified needs on two dimensions, importance and likely impact, and the results suggest that the needs assessment process has resulted in identification of needs that are broadly agreed upon and supported by Compass executives and managers, providing prioritization for strategic planning efforts.

Executive Summary

Introduction

The 2019 Compass Health Network Needs Assessment represents the culmination of a systematic 4-month process of ***reviewing the health issues and other needs present in the populations we serve, leading to agreed strategic priorities that will improve health and reduce inequities*.** Among the key reasons for conducting this needs assessment are: (1) Evidence-based reconnaissance, built on the assumption that some specific common needs exist among groups of patients/customers that can, and should, be proactively addressed through Compass Health Network's primary care, oral health care, and behavioral health services; (2) Future-focused strategies, anticipating change, because we recognize that neither the customer who comes through Compass's doors today, nor the needs demanding the most attention at present, necessarily represent the long-term health needs or emerging health improvement opportunities in the communities we serve; and (3) Meeting accreditation standards, such as those put forth by CARF, which demand that we have a systematic ongoing process for surveying needs, listening to the voices of stakeholders, and weaving that information into our strategic planning process.

The overarching questions we have endeavored to answer in this process are:

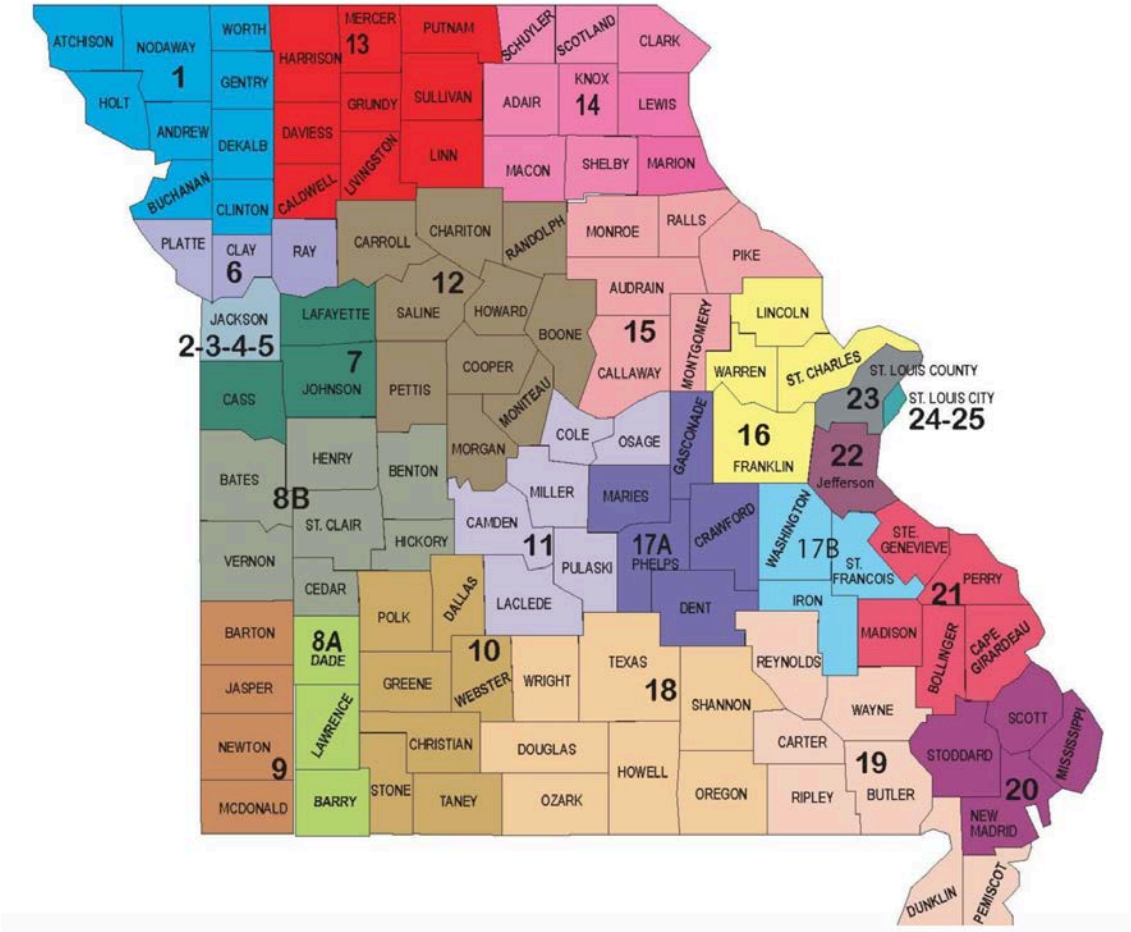
- What are the current and emerging behavioral health, primary care, and oral health care needs of our communities?
- Are there condition-specific needs that we should address as indicated by the data?
- What kinds of initiatives should we undertake across Compass Health Network's service area in the coming three years to address the data-based needs identified?

Answers to these questions emerge from many-layered and multi-pronged data collection and analysis strategies, as described herein.

Sociodemographic and Health Status Overview of Communities

The indicators selected for this profile were chosen after a compilation process from multiple reliable sources (e.g., Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance Survey, Missouri Department of Health and Senior Services, etc.) yielding several hundred potential indicators, which were winnowed down to a manageable and meaningful set of indicators of length of life, quality of life, health risk, and social determinants of health. All indicators were subjected to statistical analysis by Compass Health region and DMH Service Area, and any indicator showing statistically significant differences (meaning the differences are unlikely to be attributable to chance or random error) were further analyzed to determine "hot spots" of relative severity. All of these tables and maps are available for review in the full report.

The DMH regions all share similar opportunities and outcomes with two notable exceptions. Generally, the number of poor or fair health days are between 4.1 and 4.8, and all regions are consistently losing 4.5 to 5 days a month to physical or mental health issues. All regions appear to have similar levels of unhealthy coping mechanisms, such as smoking, excessive drinking, unhealthy eating (obesity) and teen births (whatever behavior is causing that). Access to healthcare and other opportunities is generally not a problem. Access to clinical care appears reasonable, as are opportunities for exercise and physical activity. Social and economic factors are similar and reasonably adequate.

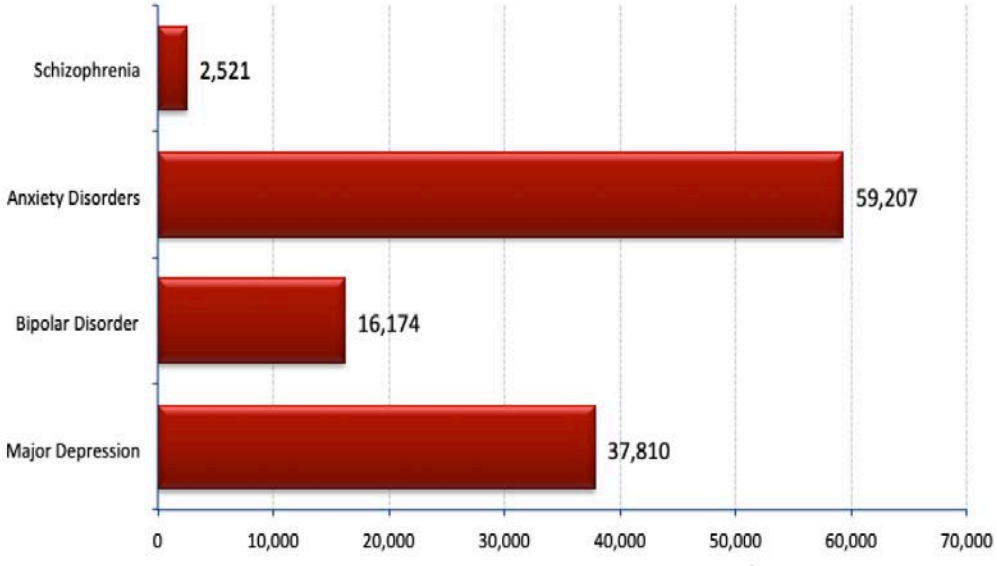


Two regions stand out for their exceptionally poor health outcomes: SA8B and SA17B. Both regions have similar demographics as other regions, but much worse outcomes. For example, regions SA17A and SA17B, which are geographically contiguous, have similar risk factors, but 17B is more affected and coping less effectively. Premature death is an issue in SA8B, but spikes even higher in SA17B. Both are exceptionally lacking in access to clinical care, and have the highest health care costs of all the regions studied. The causes for this disparity may relate to social and economic factors in these two counties. Each has the lowest median income of the regions, despite having similar demographics and rural populations. SA17B has the most trouble

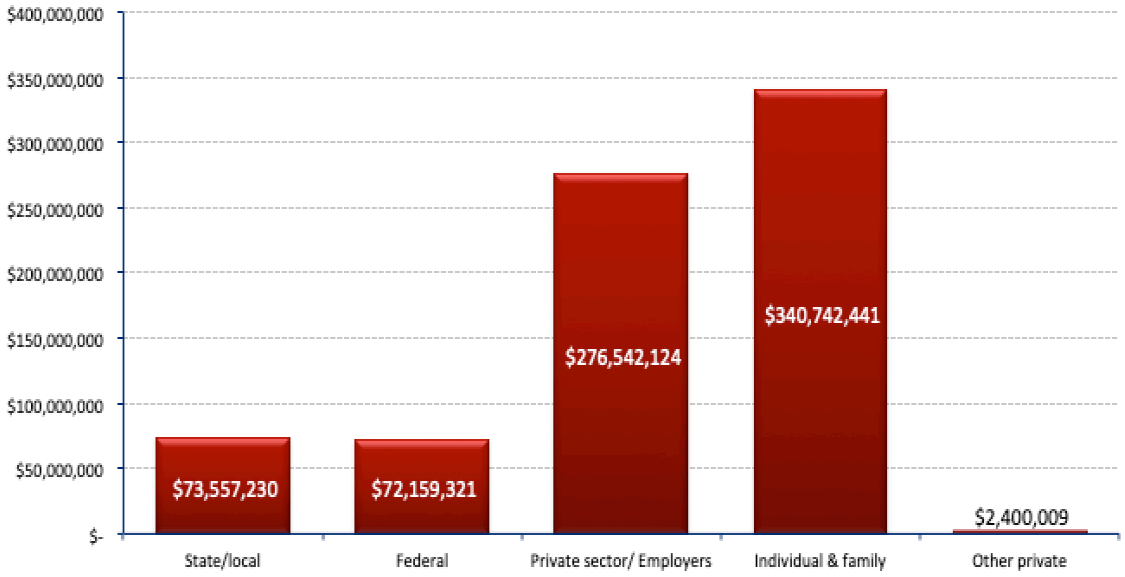
with adequate transportation and few residents re receiving dental care. The most profound medical issue relates to heart health: levels of coronary heart disease, high blood pressure, and MI, (as well as diabetes and COPD) are the highest among the regions. Notably, access to diabetes screening is similar to other regions. Both regions have levels of unemployment, and SA17B has an exceptionally high number of disabled veterans.

Prevalence and Costs of Untreated Mental Illness in Compass Service Area

The estimates provided here are based on peer-reviewed studies of prevalence, primarily analyses resulting from the National Comorbidity Survey Replication, using DSM diagnostic criteria to establish diagnoses, as well as costs related to untreated mental illness. After adjusting for population size and gender in each county, we estimate the following (these have also been calculated for each Compass region, and are available in the full report):
Untreated mental illness in the Compass Service Area, specifically, adults diagnosed with schizophrenia, anxiety disorders, bipolar disorder, and major depression who are likely not receiving regular recommended treatment in order to keep their symptoms under control:



The estimated annual costs of not treating those illnesses (a sum of indirect costs such as absenteeism and unemployment, direct medical costs, and other administrative costs) and who pays them, are as follows:



Individuals and families in the Compass service area bear the greatest burden for indirect costs of mental illness, mostly through the $271 million lost from unemployment. Employers, by contrast pay indirect costs of $191 million for presenteeism, the lost productivity resulting from workers who participate only partially in their employment. Direct medical costs are shouldered first by Medicaid, and then by private sector employers, collectively around $44 million. State and local entities accumulate an additional $10 million through criminal justice referrals and the federal government spends $4.6 million on Social Security disability payments. ***Considering the over $765.2 million in estimated total costs, it follows that by providing effective outreach, engagement and treatment that reduces untreated mental illness by even 20%, Compass Health could help return approximately $150 million to the Missouri economy.***

Less obvious, but sometimes more severe, consequences to untreated mental illness affect Compass Health communities, and we have the ability to impact these numbers through more effective outreach and treatment engagement:

- 85 Suicides
- 14,129 Incarcerations
- 18,626 Unemployed Adults

Compass Health Network Staff Survey of Unmet Need

Compass Health staff members, primarily Executives, Senior Managers, and Directors, were asked to complete a survey to identify unmet service needs across the organization and to recommend actions to meet current and emerging needs, and 52 responded. The respondents first assessed demand v. supply in their areas for mental health/psychiatric, substance abuse treatment, primary care, and oral health services, and ***the service line showing the greatest need according to staff is mental health/psychiatry by a substantial margin***, followed by

substance use treatment, oral dental care, and primary care. The stated reasons for this can be summarized as follows, with several notable regional variations:

1. Shortage of resources, including shortages of providers, therapists, clinical staff, and facilities. "IHS caseloads are growing at faster rate, staff are struggling with ensuring all individuals are being seen at the rate they need due to volume of new clients coming in," and "[There are] not enough clinicians to see the clients timely [and] Psychiatry appointments are booked out for months."

2. Inability to provide the level of care required by consumers who are uninsured or underinsured. "[We are] turning away patients who are uninsured or don't have Medicaid (some who are actively having dangerous thoughts/hallucinations)."

3. Service(s) was/were not available or was/were not within a distance accessible to potential consumers, especially in rural areas. "[It] appears that both state and national data indicate a dearth of psychiatrists - especially in more rural, isolated areas," while another stated, "It is [in] rural area[s] where primary services are limited."

Several findings by region seem notable:

- Mental health/psychiatry demand is most clearly evident in all regions except Southwest.
- Substance use treatment demand is particularly evident in Eastern and Northwest regions.
- Oral/dental demand is viewed as greatest at Royal Oaks, as is primary care demand.

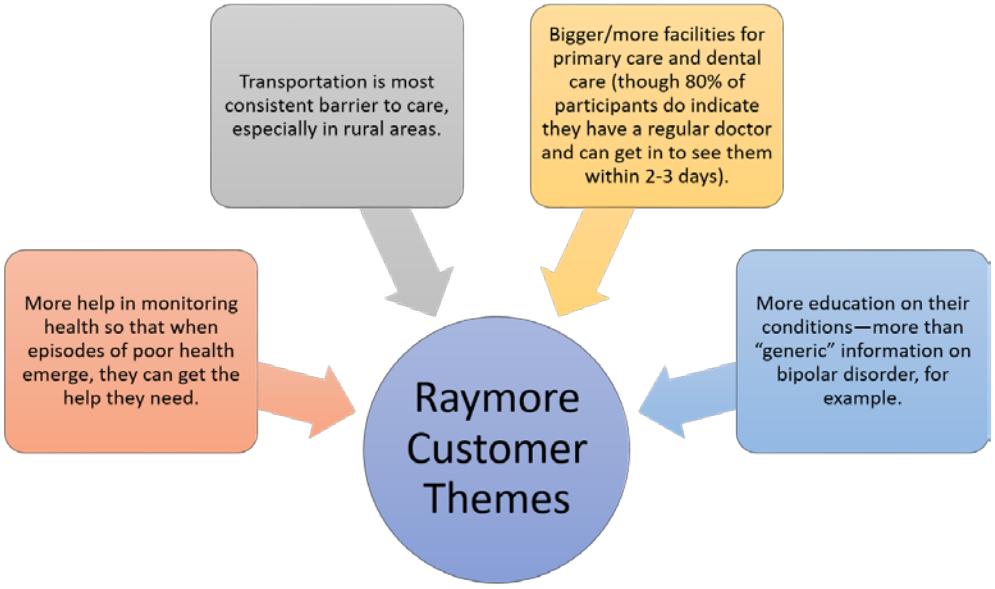
Respondents were next asked to suggest the top three things that should be done in the next year to better meet existing or emerging needs, and top themes (i.e., identified by at least 10 respondents) are:

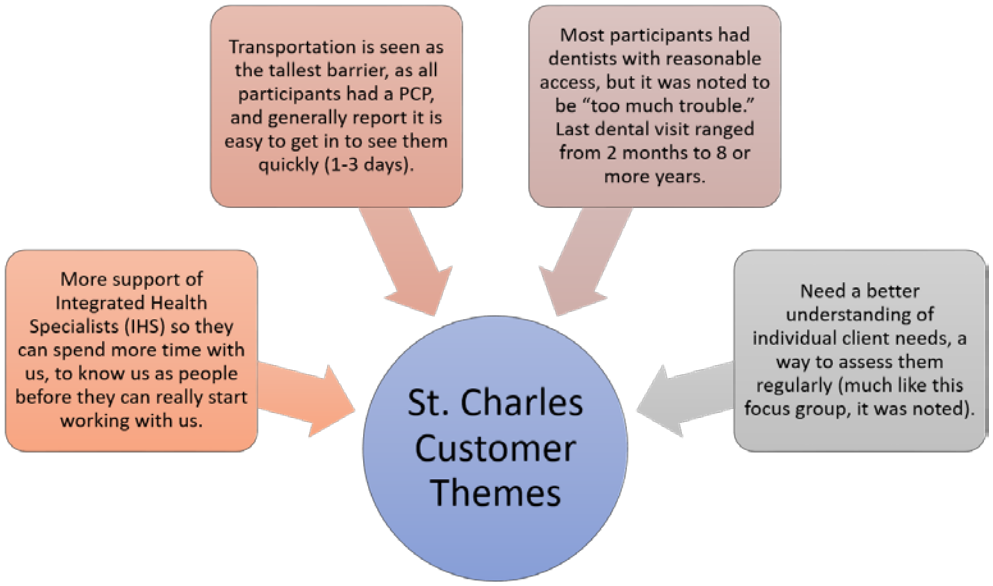
1. A need to need to expand services.
2. Additional staff to meet consumer need.
3. A need to identify and implement methods to increase efficiency.
4. Considering alternative approaches to increase care and/or the coordination of care.
5. The growing need for additional space and/or locations was suggested.
6. Increase community outreach endeavors.

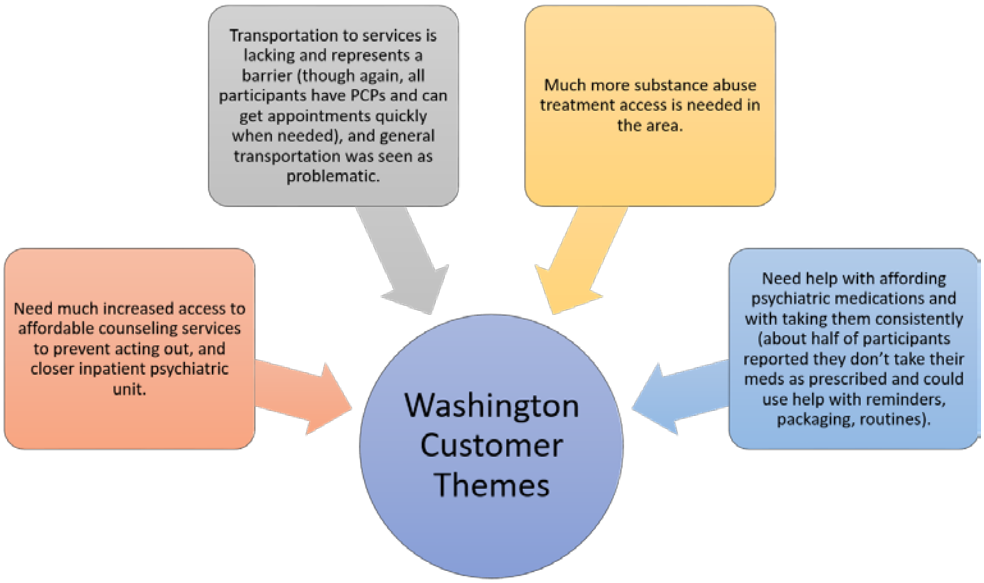
7. Need to provide additional training/tools/education to staff.

Customer Focus Groups and Structured Need Survey

Three focus groups of customers with serious and persistent mental illness were conducted in Raymore, St. Charles, and Washington during January and February 2019 as part of the needs assessment process. The following graphics depicts the major needs identified:







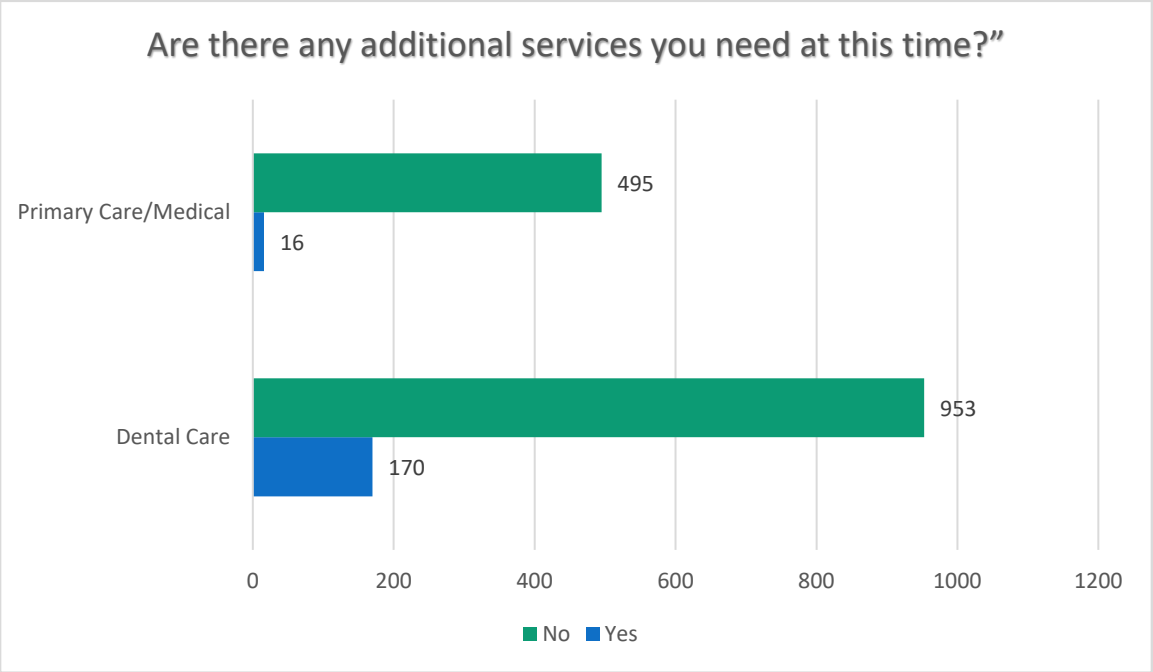
At the conclusion of each customer focus group, the clients/participants were asked to complete the *Camberwell Assessment of Need Short Appraisal Schedule* (CANSAS) self-rated version, which was developed as a tool to evaluate need among persons with serious mental illness. The tool asks respondents to think about their needs in 22 domains; and the average number of unmet needs among customers was 3.7, and the average number of met needs was 7.3 Interestingly, the number of unmet needs lines up very closely with many studies of the SMI population, as the literature generally reports between 2 and 4 unmet needs in this population. As can easily be seen, the most salient areas of unmet need identified by clients are (in descending order of frequency):

What Are the Most Common Unmet Needs?

- **Intimate relationships** (do you have a partner) and the cognate area of **sexual expression** (how is your sex life)
- **Transportation** (how do you find using the bus, etc.)
- **Benefits** (are you getting all the benefits you are entitled to)
- **Company** (are you happy with your social life)
- **Psychological distress** (feeling sad or low recently)
- **Money** (how are you at budgeting your money)
- **Physical health** (how well do you feel physically)

Key Finding from Compass Health Satisfaction Survey

Compass's survey assessing customer experiences with primary care and dental clinics concludes with the question: "Are there any additional services you need at this time?" There are currently over 1,600 responses (from the past 18 months) to this question, as follows:



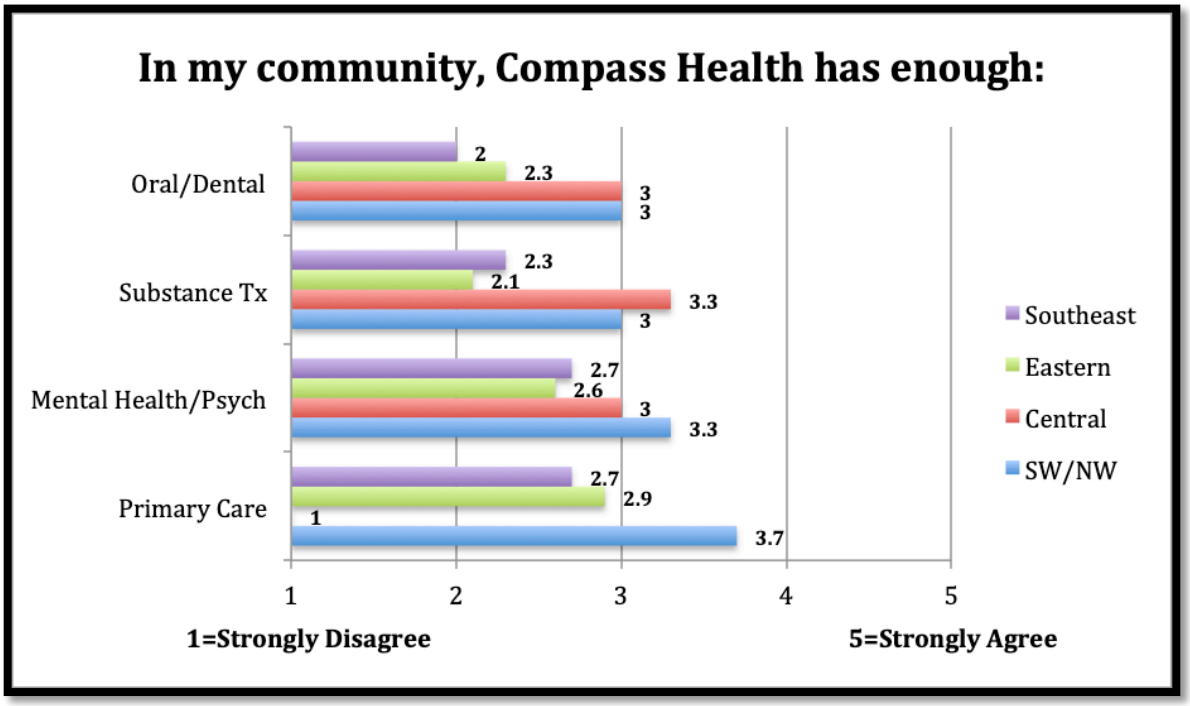
A chi-square test reveals that there is a statistically significant ($p < .05$) difference in the likelihood of customers indicating unmet need at the time of their surveys, ***with unmet dental needs remaining in substantially higher numbers than unmet primary care/medical needs.***

Community Stakeholder Focus Groups and Surveys

In January and February of 2019, community stakeholder groups (typically called *Boards of Associates* or a similar title) were consulted about the health of their communities, with a focus on the things Compass Health might be able to do to better meet community needs. These groups are comprised of key associates and stakeholders of Compass Health, and include individuals from the realms of business, healthcare, social services, education, and advocacy. The following is a high-level summary of the needs-related feedback provided by these groups:

SW/NW	Eastern	Southeast	Central
• Lack of awareness of available resources • Transportation • Affordability of services • A number of specific conditions such as addiction, heart disease and COPD.	• Substance use disorders • Mental health care and access, including affordability of medications • Obesity and related health concerns • Transportation to improve health care access • Affordable housing, and its impact on mental health • Access to dental care.	• Substance abuse; substance abuse care in close proximity, unknown potential market for services • Mental health; stress; additional mental health providers • Obesity; lack of exercise • Primary health care providers	• Behavioral health, including SUD, anxiety, suicidal ideation and depression • People getting lost, lose hope, poverty entrapment, often end up in criminal justice system • Stigma is huge, lack of education about behavioral health, families don't know where to turn to seek help

The stakeholder groups were asked specifically to assess Compass's service sufficiency, and as the following comparative analysis shows, primary care services in the SW/NW region were rated as most available/sufficient, and the clearest ratings of need were: (1) dental and SUD treatment services in the Southeast, and (2) SUD and dental treatment in the Eastern region.



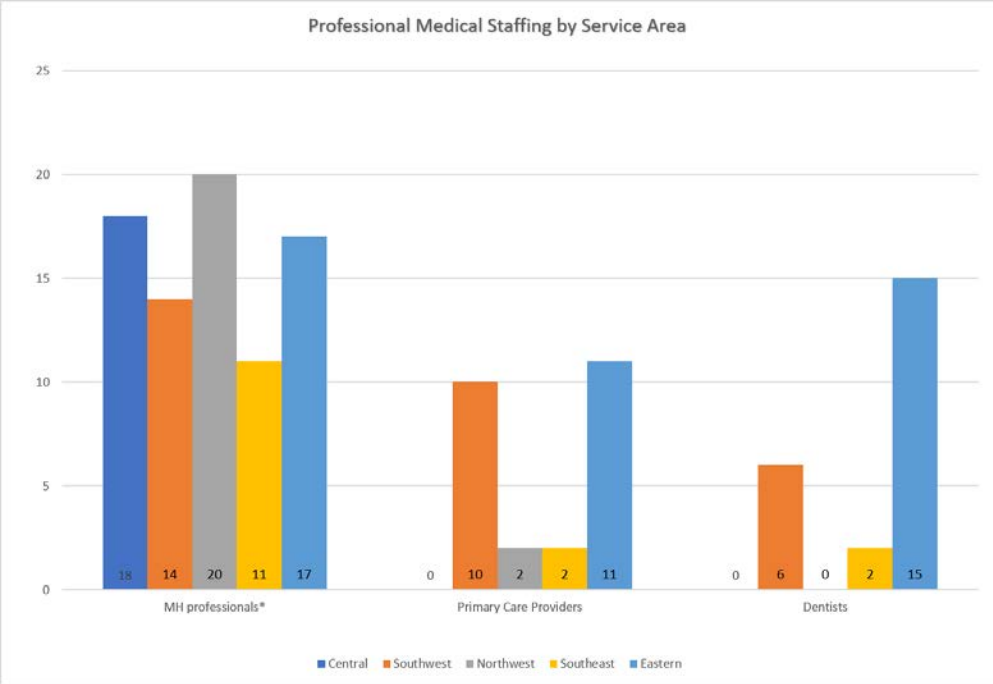
Prioritized Needs from Community Health Needs Assessments

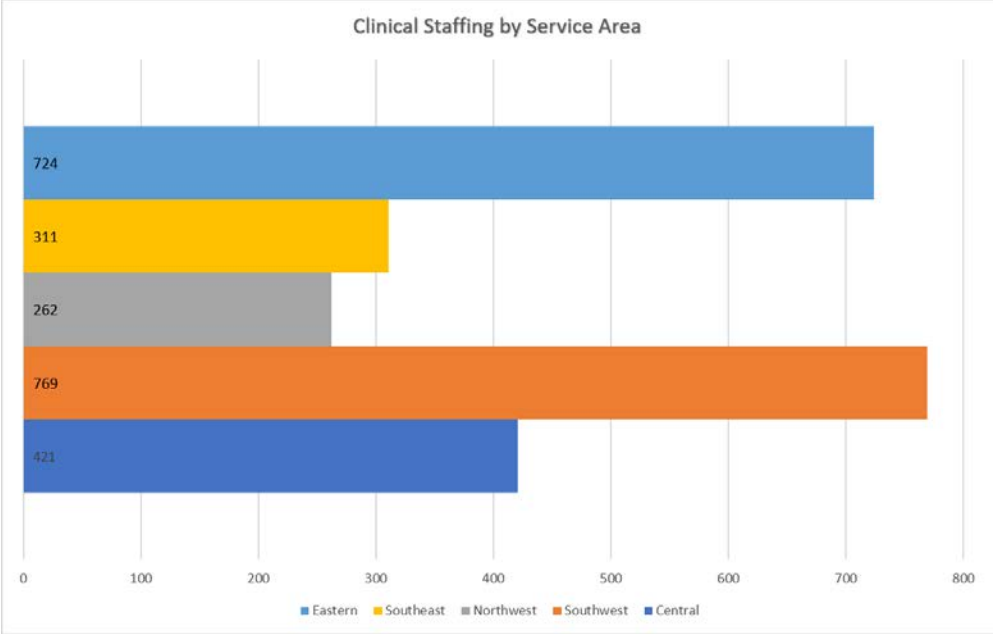
The information in this section was culled from all the most recent available community health needs assessments conducted (as required by the Affordable Care Act) by regional non-profit hospitals, whose service areas fully or partially overlap Compass Health counties. Following are the prioritized needs, compiled by region:

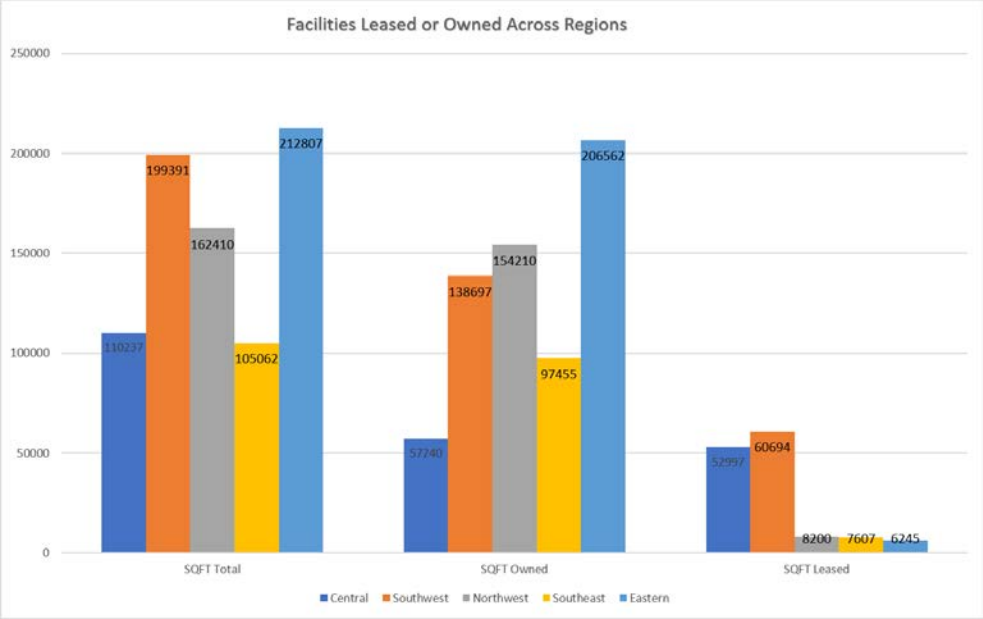
Southwest (6 CHNAs)	Eastern (2 CHNAs)	Southeast (4 CHNAs)	Northwest (4 CHNAs)	Central (6 CHNAs)
• Economic Development • Substance Abuse • Access to Primary and Specialty Care Services • Smoking • Obesity • Nutrition • Access to Dental Health for the Uninsured • Emergency Department • Shortage of Medical Professionals • Access to Mental Healthcare • Healthcare Transportation • Suicide Prevention • Urgent Care Services • Cost of Care • Services for Autistic Children/Adults	• Substance Use • Adult Obesity • Access to Care	• Adult Oral Health • Substance Abuse • Adult Obesity • Mental Health • Food and Nutrition • Heart Health	• Mental Health • Obesity, Heart Disease, Cancer, Diabetes, High Blood Pressure • Primary Care Access • Preventative Care and Wellness • Access to Dental Health for the Uninsured • Lack of Funding for Local Health Department • Health Literacy • Substance Use Disorder • Suicide • Family Planning Services • Healthcare Transportation • Urgent Care Services	• Obesity in Adults • Heart Disease Prevention • Access to Primary and Specialty Care Services • Access to Telehealth Services • Smoking • Access to Mental Healthcare • Health Literacy • Access to Prenatal Care • Substance Abuse • Dental Care for Adults • Cancer • Obesity in Children

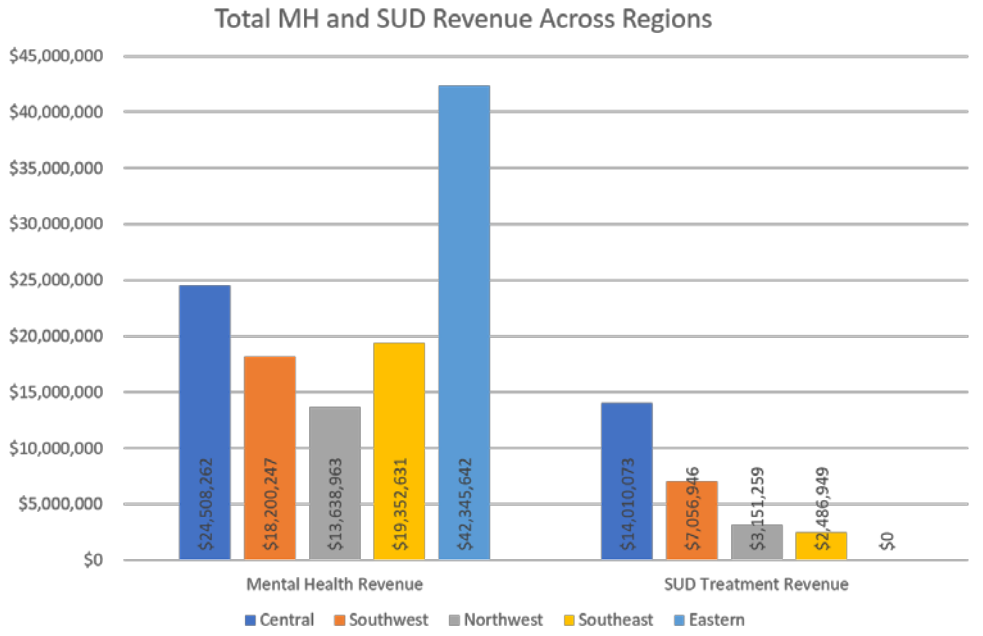
Overview of Compass Resources, Facilities, Staffing and Activities

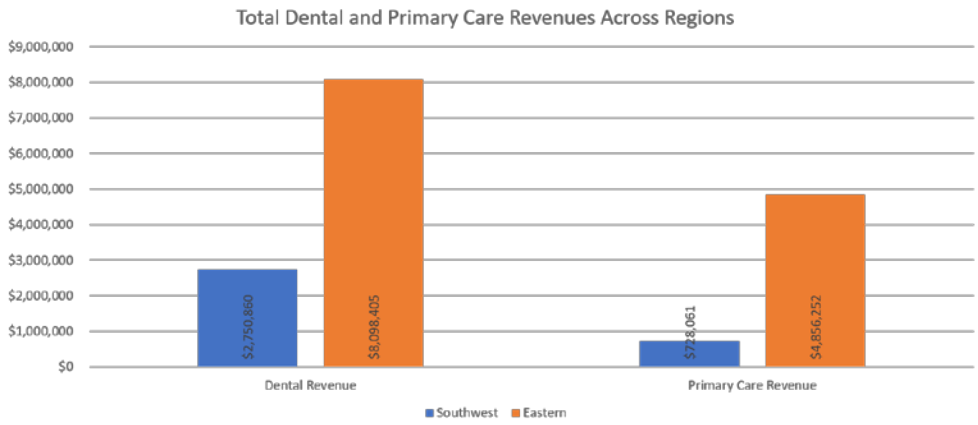
The previous sections each speak to and paint a picture of need, with little attention to Compass efforts to meet those needs. This section will provide data and information on gross indicators of resources and activities as distributed across the Compass Health service area, as well as specific indicators of unmet need relative to numbers individuals with Medicaid served. This is only intended as a high-level overview rather than a granular analysis of detailed activities.


Professional Medical Staffing by Service Area
25
20
15
10
5
0
18
14
20
11
17
0
10
2
2
11
0
6
0
2
15
MH professionals*
Primary Care Providers
Dentists
Central
Southwest
Northwest
Southeast
Eastern


Clinical Staffing by Service Area
724
311
262
769
421
0
100
200
300
400
500
600
700
800
Eastern
Southeast
Northwest
Southwest
Central


Facilities Leased or Owned Across Regions
250000
200000
150000
100000
50000
0
110237
199391
162410
105062
212807
57240
138697
154210
97455
206562
52997
60694
8200
7607
6245
SQFT Total
SQFT Owned
SQFT Leased
Central
Southwest
Northwest
Southeast
Eastern


Total MH and SUD Revenue Across Regions
$45,000,000
$40,000,000
$35,000,000
$30,000,000
$25,000,000
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$0
$24,508,262
$18,200,247
$13,638,963
$19,352,631
$42,345,642
$14,010,073
$7,056,946
$3,151,259
$2,486,949
$0
Mental Health Revenue
SUD Treatment Revenue
Central
Southwest
Northwest
Southeast
Eastern

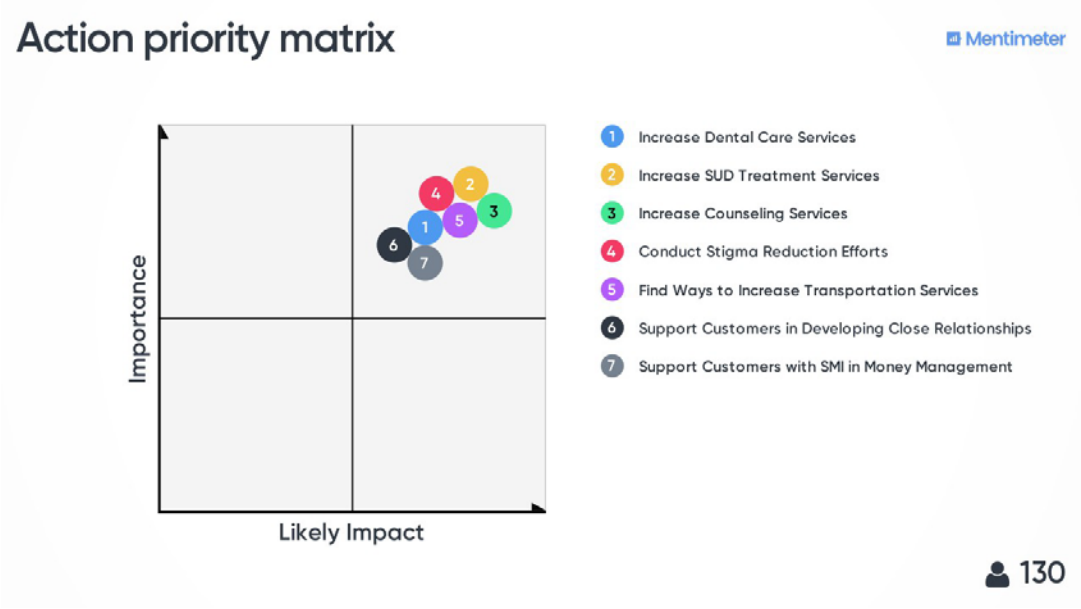


Conclusions, Summary of Cross-Cutting Themes and Prioritization of Need

- The substance use disorder treatment needs in parts of the Eastern region, coupled with limited available services reveals an important gap.
- There also appears to be a tremendous need for counseling services, with customers expressing strong desire for more time with their psychiatrists. But what they really seem to need is someone to talk to without the relatively stricter time constraints often inherent in psychiatric visits. Identified barriers were lack of insurance, and cost of service.
- Transportation, both generally and to facilitate appointment keeping, is a nearly ubiquitous issue, especially in rural areas, but is evident even in the more urban areas.
- Stigma and negative attitudes toward those with SUD and mental illness are a clearly emergent theme supported by the evidence. This should be taken seriously as a strategic priority for the organization to the extent that individuals are not accessing services because stigma is such a tall barrier. We should ensure that the face of Compass is welcoming, and its image one in which the whole person can be treated. Compass should redouble our efforts to change attitudes, engage with our community (stakeholders mentioned it at a very high rate), engage with national leadership to do something more impactful to attack stigma at its roots. One root is that health care and social service professionals are often more stigmatizing than the general population, and we should take a serious look at this problem.
- Dental care access is a very significant issue. Focus groups showed that many have a dentist and of course some do not, but even among those who do, many are afraid to go. The organization might evaluate effective practices to reduce fear of dental care, educate customers on the fact that dental care is essential to health (e.g., the well supported systemic inflammation hypothesis indicates that those with untreated oral health problems are more likely to experience cardiac and other chronic illnesses, likely contributing to many years of potential lost life. Of course, untreated oral health issues also exacerbate mental illness symptoms and functioning. Dental needs are particularly acute in our rural areas.

- The structured assessment of customer needs showed significant unmet needs in the area of developing and maintaining close, intimate, supportive relationships. The more we help customers with these crucial human needs, the better their functioning and wellness will be. This also relates to and interweaves with other needs mentioned: psychological distress can be alleviated through close, nourishing personal and social relationships as well as professional counseling relationships.
- Benefits and Money: customers with serious mental illness report unmet need for more help and education about how to manage money and feel more in control of finances.
- Physical health: We should celebrate the effectiveness with which we help customers meet their physical health care needs, as nearly all focus group participants indicated they had a regular doctor and could get appointments reasonably quickly and easily (but transportation to the appointments is a barrier).
- If we are to look for the areas of greatest unmet need according to our indicators, we should look at DMH SA8B and SA17B. There are tremendous problems relating to longevity and quality of life, they have the highest health care costs, and more disabled veterans, of all regions.

As a final step before bringing the results of the needs assessment to the Board of Directors, the above findings were presented to the large staff management meeting (with approximately 150 attendees), and they were asked in an interactive real-time exercise to rate each of the identified needs on two dimensions, importance and likely impact, with the following results:



These results suggest that the needs assessment process has resulted in identification of needs that are broadly agreed upon and supported by Compass executives and managers, and also provide prioritization for where to place our efforts for maximum impact.

Introduction to the 2019 Compass Health Network Needs Assessment

Background & Definitions

The 2019 Compass Health Network Needs Assessment represents the culmination of a process dedicated to: (1) *understanding the needs* of the people we are serve, or could be serving, (2) *inventorying the assets and services* being directed toward meeting those needs, and (3) *assessing the gap* between identified needs and the available services, so that we can pursue strategic actions to address gaps and anticipate emerging needs in the communities we serve.

Needs assessments are created by health service organizations to better understand and serve their communities. The assessments are variously called “needs assessment”, “health needs assessment”, “community health needs assessment”, and “health care needs assessment”; and descriptions of their purpose is manifold:

1. a systematic method for reviewing the health issues facing a population, leading to agreed priorities and resource allocation that will improve health and reduce inequities (National Institute for Clinical Evidence, UK);
2. a dynamic ongoing process undertaken to identify the strengths and needs of the community, enable the community wide establishment of priorities and facilitate collaborative action planning directed at improving community health status and quality of life (Manitoba Community Health Needs Assessment);
3. the systematic approach to ensuring that health resources are used to improve the health of the population in the most efficient way (Health Needs Assessment, BMJ).

Why Do A Needs Assessment?

Evidence-Based Reconnaissance. Businesses must understand the needs of customers. Needs assessments are routinely conducted in many sectors including health, education, and community services to help identify what is “real need.” The *real need* may be based upon selected definitions or criteria important to the industry or field. Needs assessments, therefore, are built on the assumption that some specific common needs exist among a group of patients/customers that can, and should, be proactively addressed by primary care, oral health care, and behavioral health practices. The term *proactive* is fundamental to describing an approach that does not simply react to customers as they flow into services, but rather examines the commonalities of needs and proactively employs strategies to efficiently and effectively respond to those needs.

Future-Focused Strategies. While health care providers use clinical guidelines and medical tools to assess the needs of individual patients, assessing entire populations or service areas is

a larger and more difficult process. When preparing for the future, we recognize that neither the customer who comes through Compass's doors today, nor the needs demanding the most attention at present, necessarily represent the long-term health needs or emerging health improvement opportunities in the communities we serve.

Anticipating Change. The regions that Compass serves today are continually changing. Demographic shifts and population growth will place new demands upon the current service capacity. It is vital that we anticipate and plan for the changing needs of our communities three to five years down the road.

Accreditation. Meeting accreditation standards, such as those put forth by CARF, which demand that we have a systematic ongoing process for surveying needs, listening to the voices of stakeholders, and weaving that information into our strategic planning process..

The Purpose of Needs Assessment

The first task of needs assessment is to define the question(s) to be answered. The questions define the scope of our activity and inquiry, shaping the information available to be used and the partners who will be engaged. The questions addressed in our needs assessment process are from multiple levels, from the broad to the targeted:

- What are the current and emerging behavioral health, primary care, and oral health care needs of our communities?
- Are there condition-specific needs that we should address as indicated by the data?
- What kinds of initiatives should we undertake across Compass Health Network's service area in the coming three years to address the data-based needs identified?

Needs Assessment Steps

The Compass Health Needs Assessment process has proceeded according to a set of steps identified and agreed to at the outset by executive leadership, as follows:

- **Step 1:** *Define the community*. Defining the community is a key component of the needs assessment process as it determines the scope of the assessment and subsequent interventions. The scope is defined by Compass's service area, both the five internally designated regions and overlapping DMH service areas.
- **Step 2:** *Identify and engage stakeholders.* Includes internal and external stakeholders from multiple and representative layers of the community. This was done through internal meetings and surveys of leadership, as well as focus groups and surveys of other stakeholders, including Boards of Associates and customers.
- **Step 3:** *Identify, collect, compile and analyze data*. This has been accomplished by aggregating primary (we collected) and secondary (collected by others, existing, archival) data, both qualitative and quantitative, to prioritize community health and behavioral health

needs. Patients and community stakeholders have provided perspectives to complement quantitative findings through surveys, interviews, focus groups, and other meetings. *These data shed light on (a) existing and emerging needs in the communities served, and (b) assets and resources available to address those needs.*

- **Step 4:** *Select priority needs and community health issues.* The quantitative and qualitative data collected and analyzed in step 3 have been compiled and used to ***identify and prioritize needs.*** While quantitative data can illuminate the scope and severity of particular health issues, stakeholders in the community and the health care system explain and emphasize the urgency of these issues.
- **Step 5:** *Document and communicate the needs assessment.* This final step has resulted in this needs assessment report to be used in the Compass Health Network strategic planning process.

Sections of the Report

The remainder of this report comprises the following sections:

- A socio-demographic and health status overview of Compass Health service area
- Prevalence and costs of untreated mental illness in the Compass Health service area
- Staff survey of unmet need: a survey of compass health supervisors, directors, senior managers, and executives
- Needs assessment focus groups of customers
- Structured needs assessment of customers with serious mental illness
- Key findings from compass health customer satisfaction surveys with relevance to assessing unmet needs
- Needs assessment input from regional stakeholder groups: focus group and survey results
- Prioritized population health needs across Compass Health regions drawn from community health needs assessments
- Overview of Compass Health resources, facilities, staffing and activity across the service area
- Synthesis of findings: prioritized needs to guide strategic planning

Sociodemographic and Health Status Overview of Compass Health Service Areas

Introduction

This section provides an overview and analysis of important sociodemographic, health status, health outcomes, and health risk factors, drawn from a number of sources to paint a data-based picture of potential existing and emerging health needs in the Compass Health service area (see Appendix A for a "data dictionary" and references to better understand the source materials for the tables starting on the next page).

For purposes of this assessment, the 45-county Compass Health service area was analyzed in two ways: (1) according to Compass Health's internal designation of geographic/programmatic areas, including Eastern, Southwest, Southeast, Northwest, and Central; and (2) according to Department of Mental Health Service Areas that either fully or partially overlap with the counties served by Compass. These two views of the data allow for comparisons and enrich our understanding about the future needs, especially in regions where we already serve some counties, but not all.

Description and Analysis of Compass Health Regions

The indicators selected for this profile were chosen after a compilation process from multiple sources (see Appendix A), yielding several hundred potential indicators. That field was sifted through and winnowed down to a manageable and meaningful set of indicators most predictive of, or related to, length of life, quality of life, health risk, and social determinants of health. The tables beginning on the next page present all selected indicators averaged across the Compass region or DMH Service Area (i.e., county level data are the individual unit of analysis). All indicators were subjected to a one-way analysis of variance by region or DMH Service Area, and any indicator showing statistically significant differences (meaning the differences are unlikely to be attributable to chance or random error) were further analyzed to determine where the significant differences are found. In the tables, the cells marked in red are considered statistically homogeneous in the direction of poorer health or higher risk/need (i.e., statistically significantly different that the non-marked cells).

For any indicator on which there were statistically significant regional or service area differences, a "hot spot" map was created to show the relative severity of that indicator in the context of all counties comprising the Compass service area and the entire state. These maps can be viewed in Appendix C to allow better contextual visualization of health status.

Health Outcomes							
Length of Life	**Eastern**	**Southwest**	**Southeast**	**Northwest**	**Central**	**Compass**	**Missouri**
Premature death*	7,136	9,588	9,941	7,501	7,308	8,418	7,800
Quality of Life							
Poor or fair health*	15%	20%	20%	18%	18%	19%	19%
Poor physical health days*	4.0	4.8	4.7	4.4	4.3	4.5	4.2
Poor mental health days*	4.1	4.6	4.5	4.3	4.3	4.4	4.4
Low birth weight	7%	8%	8%	7%	8%	8%	8%
Health Factors							
Health Behaviors							
Adult smoking*	20%	22%	23%	20%	20%	21%	22%
Adult obesity	30%	32%	33%	34%	33%	33%	32%
Food environment index*	8.2	7.3	7.1	7.6	7.6	7.5	6.7
Physical inactivity	28%	29%	31%	30%	28%	29%	26%
Access to exercise opportunity	69%	46%	62%	50%	54%	55%	77%
Excessive drinking*	20%	15%	17%	17%	18%	17%	19%
Alcohol impaired MV deaths	38%	27%	29%	34%	28%	30%	30%
STI	267.8	221.2	269.5	322.9	298.3	276.4	477.4
Teen births*	26	40	40	28	30	34	30
Clinical Care							
Uninsured*	11%	16%	14%	12%	12%	13%	12%
Primary care physicians	6,041:1	3,214:1	5,211:1	3,692:1	3,038:1	3,930:1	1,420:1
Dentists	3,813:1	4,071:1	3,882:1	3,030:1	3,800:1	3,790:1	1,810:1
Mental health providers	1,654:1	2,072:1	1,270:1	2,626:1	2,804:1	2,157:1	590:1
Preventable hospital stays	53	66	70	64	55	62	57
Diabetes monitoring	86%	85%	84%	86%	86%	85%	86%
Mammography screening	62%	57%	59%	57%	62%	60%	63%
Social & Economic Factors							
High school graduation	91%	90%	91%	91%	90%	91%	90%
Some college	62%	49%	50%	57%	53%	53%	66%
Unemployment*	4.1%	5.4%	5.5%	4.6%	4.4%	4.9%	4.5%
Children in poverty*	13%	29%	25%	18%	20%	22%	19%
Income inequality	3.9	4.3	4.4	4.3	4.2	4.2	4.6
Children w single-parents*	27%	31%	31%	30%	30%	30%	34%
Social associations	9.6	14.3	14.3	14.4	13.8	13.7	11.6
Violent crime*	222	332	259	193	179	235	442
Injury deaths*	89	93	101	71	69	84	79

Physical Environment							
	Eastern	Southwest	Southeast	Northwest	Central	Compass	Missouri
Severe housing problems*	13%	15%	14%	13%	12%	13%	15%
Quality of Life							
Frequent physical distress*	12%	15%	14%	13%	13%	13%	13%
Frequent mental distress*	12%	14%	14%	13%	13%	13%	14%
Diabetes prevalence	11%	13%	12%	12%	12%	12%	11%
HIV prevalence	82	105	88	78	137	104	234
Health Behaviors							
Food insecurity*	12%	16%	16%	14%	14%	15%	16%
Limited access to healthy food	3%	7%	8%	7%	6%	6%	7%
Drug overdose	25	18	24	12	18	21	19
Drug overdose-modeled*	9	9	11	6	7	8	23.6
Motor vehicle crash deaths*	18	22	26	16	18	21	14
Insufficient sleep	32%	32%	33%	33%	32%	33%	34%
Clinical Care							
Uninsured adults*	12%	18%	17%	14%	14%	16%	14%
Uninsured children*	6%	9%	7%	7%	8%	8%	6%
Health care costs*	$10,251	$9,449	$10,119	$9,776	$8,945	$9,560	$9,750
Other primary care providers	3,024:1	2,159:1	1,858:1	1,935:1	3,886:1	2,708:1	1,268:1
Social & Economic Factors							
Disconnected youth	12%	16%	21%	13%	18%	17%	13%
Median household income*	$61,945	$38,446	$40,941	$49,774	$47,834	$45,784	$51,700
Free-reduced lunch eligible*	40%	66%	62%	47%	53%	56%	50%
% at or below Fed Pov Level	11.37%	20.73%	19.04%	14.92%	15.30%	16.90%	
Residential segreg-B/W	40	52	45	44	42	43	71
Residential segreg-W/Non-W*	26	29	25	30	35	30	58
Homicides	3	4	6	4	4	4	8
Firearm fatalities	13	16	16	14	15	15	16
Reported Behavioral Health Indicators							
Has depression	24%	24%	24%	21%	21%	23%	23%
Heavy drinker	8%	7%	5%	8%	8%	7%	6%
Binge drinker*	22%	15%	14%	19%	18%	17%	15%

Reported Physical Health Conditions & Functioning	Eastern	Southwest	Southeast	Northwest	Central	Compass	Missouri
High blood pressure	36%	39%	40%	36%	36%	37%	38%
Coronary heart disease	4%	6%	6%	6%	5%	5%	6%
Myocardial infarction*	7%	11%	11%	9%	8%	9%	10%
Diabetes	13%	14%	14%	13%	11%	13%	13%
COPD*	8%	13%	12%	8%	8%	10%	11%
Asthma*	9%	10%	11%	7%	9%	9%	10%
Cancer*	9%	10%	10%	12%	10%	10%	10%
Hlth limits activity days/mo*	3	4	4	2	3	3	3
Access to Care							
No regular doctor	20%	21%	24%	23%	24%	23%	23%
Didn't get needed med care*	20%	18%	22%	16%	17%	19%	19%
Cost	46%	55%	56%	49%	55%	54%	54%
Transportation	10%	11%	13%	6%	8%	10%	11%
Other	54%	49%	50%	57%	52%	52%	50%
Couldn't get needed dental*	28%	31%	32%	25%	26%	29%	29%
No recent dental exam*	34%	49%	47%	39%	42%	43%	44%
Demographics							
Population	582,825	172,556	304,050	228,814	525,308	1,813,553	6,093,000
% below 18 years of age	24%	22%	22%	23%	22%	22%	22%
% 65 and older*	15%	23%	18%	18%	18%	19%	16%
% Non-Hisp African Amer*	2%	1%	2%	3%	5%	3%	11%
% Amer Ind & Alaska Native*	0.4%	0.8%	0.7%	0.6%	0.5%	0.6%	0.6%
% Asian	1%	0.4%	0.9%	0.7%	0.8%	0.8%	2%
% Native Hawaiian/Other PI	0.05%	0.08%	0.1%	0.4%	0.07%	0.1%	0.1%
% Hispanic	3%	3%	3%	4%	2%	3%	4%
% Non-Hispanic white	92%	93%	92%	89%	90%	91%	79%
% not proficient in English	0.4%	0.5%	0.2%	0.6%	0.4%	0.4%	1%
% Females	50.2%	50.3%	48.7%	50.2%	49.2%	49.5%	50.9%
% Rural	49.8%	76.1%	69.8%	58.3%	63.3%	65.6%	29.6%
Veteran Population							
Number of veterans	16,451	40,649	24,171	79,774	37,109	198,154	442,579
Veterans in poverty	7%	10%	10%	7%	8%	9%	8%
Disabled veterans*	29%	37%	41%	29%	32%	35%	21%

**Statistically significant differences exist between Compass regions on this indicator*

Description and Analysis According to DMH Service Areas

Health Outcomes

Length of Life	SA7	SA8B	SA11	SA12	SA15	SA16	SA17A	SA17B	Compass	Missouri
Premature death*	7,336	9,784	7,606	7617	7,488	7,136	8,953	12,079	*8,418*	**7,800**
Premature age-adj. mortality*	374	484	384	385	391	360	426	583	*419*	**390**
Child mortality	61	83	60	58	61	53	72	65	*63*	**60**
Infant mortality	6	.	8	5	7	5	9	8	*7*	**7**
Injury deaths*	62	95	73	71	74	89	100	107	*84*	**79**
Motor vehicle crash deaths*	14	23	20	16	19	18	27	26	*21*	**14**
Alcohol impaired MV deaths	36%	26%	34%	29%	23%	38%	28%	26%	*30%*	**30%**
Homicides	4	.	5	3	4	3	4	5	*4*	**8**
Suicide	13.25	17.05	14.72	12.62	15.84	16.08	15.46	15.77	15.01	**18.36**
Firearm fatalities	14	18	14	14	15	13	16	18	*15*	**16**
Quality of Life										
Poor or fair health*	17%	20%	18%	19%	18%	15%	19%	20%	*19%*	**19%**
Poor physical health days*	4.3	4.8	4.4	4.6	4.4	4.1	4.6	4.8	*4.5*	**4.2**
Poor mental health days*	4.1	4.6	4.3	4.4	4.4	4.1	4.5	4.6	*4.4*	**4.4**
Low birth weight babies	7%	8%	7%	8%	8%	7%	8%	9%	*8%*	**8%**
Frequent physical distress*	12%	15%	13%	14%	13%	12%	14%	14%	*13%*	**13%**
Frequent mental distress*	12%	14%	13%	13%	13%	12%	14%	14%	*13%*	**14%**
Hlth limits activity days/mo*	2	4	3	3	3	3	4	5	*3*	**3**
Physical Health Conditions & Functioning										
High blood pressure*	34%	40%	34%	35%	39%	36%	37%	46%	*37%*	**38%**
Coronary heart disease	4%	6%	5%	6%	4%	4%	5%	9%	*5%*	**6%**
Myocardial infarction*	7%	11%	9%	9%	9%	7%	10%	14%	*9%*	**10%**
Diabetes	10%	14%	11%	13%	13%	13%	12%	17%	*13%*	**13%**
COPD*	6%	14%	8%	9%	9%	8%	11%	16%	*10%*	**11%**
Asthma	8%	11%	8%	9%	9%	9%	9%	13%	*9%*	**10%**
Diabetes prevalence	11%	13%	11%	11%	12%	11%	13%	13%	*12%*	**11%**
HIV prevalence	78	119	88	118	137	82	86	107	*104*	**234**
Cancer	11%	11%	10%	10%	11%	9%	10%	11%	*10%*	**10%**

Health Factors

Health Behaviors	SA7	SA8B	SA11	SA12	SA15	SA16	SA17A	SA17B	Compass	Missouri
Adult smoking*	20%	22%	21%	21%	21%	20%	22%	24%	*21%*	**22%**
Adult obesity*	33%	32%	31%	34%	33%	30%	34%	33%	*33%*	**32%**
Physical inactivity	26%	30%	26%	29%	30%	28%	32%	31%	*29%*	**26%**
Access to exercise opportunity	59%	45%	61%	50%	49%	68%	57%	67%	*55%*	**77%**
STI	389	199	327	305	292	268	234	263	*276.4*	**477.4**
Drug overdose	12	26	16	10	24	25	24	33	*21*	**19**
Drug overdose-modeled*	5	9	8	7	8	9	10	14	*8*	**23.6**
Insufficient sleep*	32%	32%	33%	33%	33%	32%	33%	35%	*33%*	**34%**
Behavioral Health Indicators										
Has depression	21%	25%	22%	21%	21%	24%	20%	28%	*23%*	**23%**
Heavy drinker	9%	7%	8%	7%	7%	8%	5%	5%	*7%*	**6%**
Binge drinker*	19%	15%	19%	17%	16%	22%	15%	16%	*17%*	**15%**
Excessive drinking*	19%	15%	18%	17%	17%	20%	17%	18%	*17%*	**19%**

Clinical Care

Health care costs*	$9,908	$9,672	$8,923	$8,918	$9,524	$10,251	$9,799	$11,105	*$9,560*	**$9,750**
Primary care physicians	3,301:1	3,124:1	2,923:1	3,235:1	3,288:1	6,041:1	8,258:1	1,963:1	*3,930:1*	**1,420:1**
Other primary care providers	2,036:1	1,821:1	4,078:1	2,512:1	3,863:1	3,025:1	2,402:1	1,504:1	*2,708:1*	**1,268:1**
Dentists	2,966:1	4,010:1	2,697:1	3,282:1	5,165:1	3,813:1	4,170:1	5,226:1	*3,790:1*	**1,810:1**
Mental health providers	1,173:1	2,046:1	3,587:1	2,508:1	2,230:1	1,655:1	1,689:1	1,211:1	*2,157:1*	**590:1**
Preventable hospital stays	65	66	54	55	67	53	60	82	*62*	**57**
Diabetes monitoring	61%	84%	85%	85%	86%	86%	85%	82%	*85%*	**86%**
Mammography screening	57%	56%	65%	59%	60%	62%	63%	57%	*60%*	**63%**

Access to Care

Uninsured*	10%	15%	13%	14%	12%	11%	15%	14%	*13%*	**12%**
Uninsured adults*	12%	18%	15%	16%	15%	12%	17%	16%	*16%*	**14%**
Uninsured children*	6%	9%	7%	8%	7%	6%	8%	7%	*8%*	**6%**
No regular doctor	25%	20%	26%	24%	22%	20%	22%	24%	*23%*	**23%**
Didn't get needed med care	16%	17%	20%	17%	17%	20%	19%	22%	*19%*	**19%**
Cost	49%	59%	59%	48%	56%	46%	60%	51%	*54%*	**54%**
Transportation	6%	12%	10%	8%	9%	10%	11%	18%	*10%*	**11%**
Other*	61%	46%	50%	55%	51%	54%	46%	49%	*52%*	**50%**
Couldn't get needed dental*	25%	32%	27%	26%	28%	28%	29%	37%	*29%*	**29%**
No recent dental exam*	34%	50%	40%	42%	45%	34%	46%	51%	*43%*	**44%**

Social & Economic Factors

Educational Indicators	**SA7**	**SA8B**	**SA11**	**SA12**	**SA15**	**SA16**	**SA17A**	**SA17B**	**Compass**	**Missouri**
High school graduation	92%	88%	91%	91%	90%	91%	90%	92%	*91%*	**90%**
Some college	63%	50%	57%	53%	48%	62%	49%	46%	*53%*	**66%**
Economic Indicators										
Unemployment*	4.4%	5.4%	4.8%	4.7%	4.4%	4.1%	5.0%	6.3%	*4.9%*	**4.5%**
Children in poverty*	15%	29%	20%	21%	22%	14	24	27	*22%*	**19%**
Income inequality*	4.0	4.3	4.0	4.5	3.9	3.9	4.7	4.3	*4.2*	**4.6**
Median household income*	$55,581	$37,931	$48,658	$45,456	$45,860	$61,945	$42,477	$37,576	*$45,784*	**$51,700**
% at or below Fed Pov Level	12.85%	20.77%	15.14%	17.29%	15.30%	11.37%	19.52%	19.48%	*16.76%*	
Free-reduced lunch eligible*	40%	63%	51%	57%	55%	40%	56%	72%	*56%*	**50%**
Social Indicators										
Children w single-parents	29%	32%	29%	29%	31%	27%	31%	31%	*30%*	**34%**
Social associations	11.7	14.3	14.6	14.7	12.9	9.6	14.2	14.4	*13.7*	**11.6**
Teen births*	24	40	33	31	34	26	34	49	*34*	**30**
Disconnected youth	13%	18%	14%	16%	21%	12%	15%	27%	*17%*	**13%**
Residential segreg-B/W	50	45	50	41	38	40	39	52	*43*	**71**
Residential segreg-W/Non-W	32	28	35	31	36	26	25	28	*30*	**58**
Physical Environment										
Severe housing problems*	13%	15%	13%	14%	11%	13%	14%	14%	*13%*	**15%**
Food insecurity*	14%	16%	15%	15%	14%	12%	16%	17%	*15%*	**16%**
Limited access to healthy food	7%	7%	7%	6%	6%	3%	4%	9%	*6%*	**7%**
Food environment index*	7.7	7.2	7.5	7.5	7.7	8.2	7.5	6.9	*7.5*	**6.7**
Violent crime	139	329	249	238	152	222	204	292	*235*	**442**

Demographics

General	SA7	SA8B	SA11	SA12	SA15	SA16	SA17A	SA17B	Compass	Missouri
Population (2016)	63,135	15,733	41,357	34,721	19,990	145,706	21,593	33,829	*1,813,553*	**6,093,000**
% Females	50%	50%	49%	50%	49%	50%	50%	48%	*49.5%*	**50.9%**
% Rural	47%	78%	65%	58%	72%	50%	74%	65%	*65.6%*	**29.6%**
% below 18 years of age	23%	21%	22%	23%	22%	24%	22%	22%	*22%*	**22%**
% 65 and older*	16%	24%	17%	18%	19%	15%	20%	17%	*19%*	**16%**
Ethnic Categories										
% Non-Hispanic white	89%	94%	89%	89%	91%	92%	94%	94%	*91%*	**79%**
% Hispanic	4%	2%	4%	4%	2%	3%	2%	2%	*3%*	**4%**
% Non-Hisp African Amer	4%	1%	4%	4%	4%	2%	1%	3%	*3%*	**11%**
% Amer Ind & Alaska Native*	0.7%	0.8%	0.6%	0.6%	0.4%	0.7%	0.5%	0.6%	*0.6%*	**0.6%**
% Asian	0.4%	1.1%	0.9%	0.5%	1.0%	1.1%	0.3%	0.8%	*0.8%*	**2%**
% Native Hawaiian/Other PI	0.1%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.0%	*0.1%*	**0.1%**
% not proficient in English	0.5%	0.1%	0.3%	0.9%	0.4%	0.4%	0.3%	0.1%	*0.4%*	**1%**
Veteran Population										
Number of veterans	5,545	5,092	3,853	8,230	1,617	4,113	1,938	1,341	*198,154*	**442,579**
Veterans in poverty	5%	9%	9%	9%	6%	7%	11%	11%	*9%*	**8%**
Disabled veterans*	26%	38%	33%	33%	31%	29%	37%	47%	*35%*	**21%**

**Statistically significant differences exist between DMH regions on this indicator*

Note: SA19 – % at or below Fed Pov Level 19.64%

Health Outcomes Among Compass DMH Regions

General Observations

The DMH regions all share similar opportunities and outcomes with two notable exceptions. Generally, the number of poor or fair health days are between 4.1 and 4.8, so regardless of whether the region has been flagged (in red), all regions are consistently losing 4.5 to 5 days a month to physical or mental health issues. All regions appear to have similar levels of unhealthy coping mechanisms, such as smoking, excessive drinking, unhealthy eating (obesity) and teen births (whatever behavior is causing that). Access to healthcare and other opportunities is generally not a problem. Access to clinical care is reasonable, as well as to opportunities for exercise and to physical activity. Social and economic factors are similar and reasonably adequate.

Exceptions

Two regions stand out for their exceptionally poor health outcomes: SA8B and SA17B. Both regions have similar demographics as in other regions, but much worse outcomes. For example, regions SA17A and SA17B, which are geographically contiguous, have similar risk factors, but 17B is more affected and coping less effectively. Premature death is an issue in SA8B, but spikes even higher in SA17B. Both are exceptionally lacking access to clinical care, and have the highest health care costs of all the regions studied.

The causes for this disparity may relate to social and economic factors in these two counties. Each has the lowest median income of the regions, despite having similar demographics and rural populations. SA17B has the most trouble with adequate transportation and few residents re receiving dental care. The most profound medical issue relates to heart health: levels of coronary heart disease, high blood pressure, and MI, (as well as diabetes and COPD) are the highest among the regions. Notably, access to diabetes screening is similar to other regions. Both regions have levels of unemployment, and SA17B has an exceptionally high number of disabled veterans.

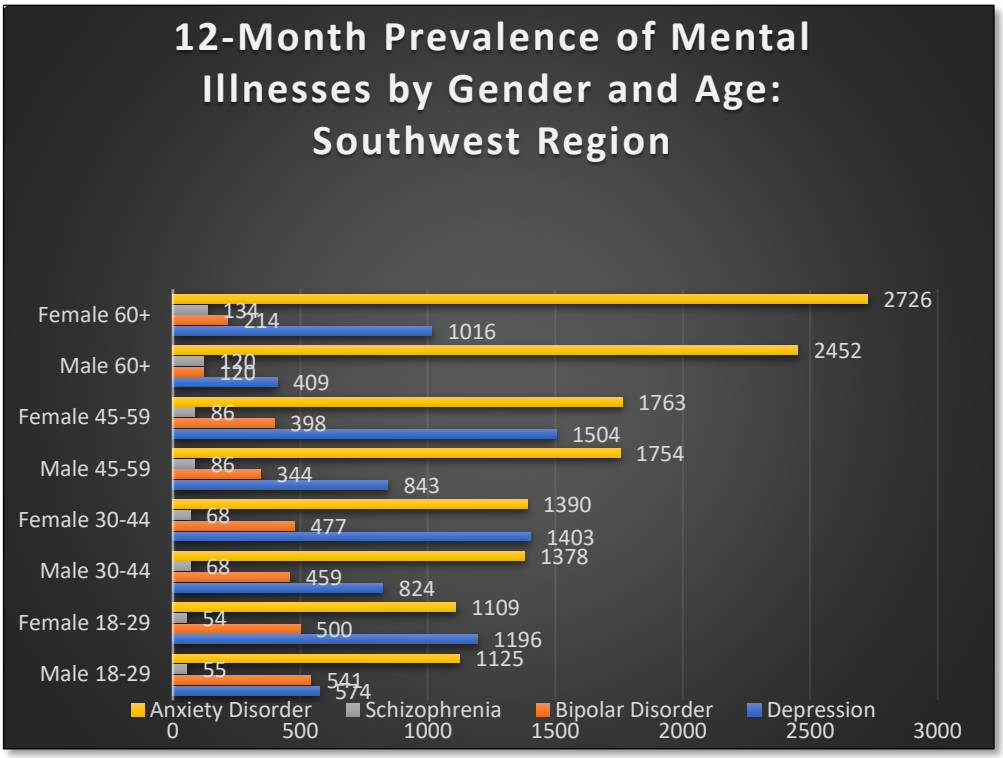
Prevalence and Costs of Mental Illness by Compass Health Region

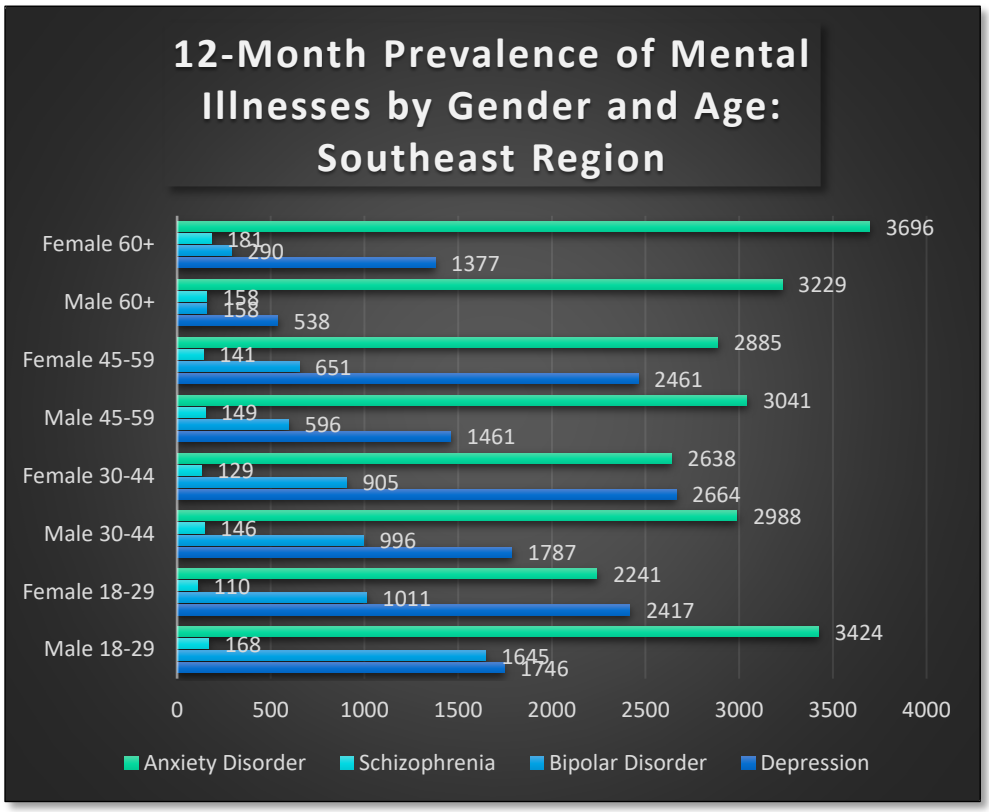
Introduction

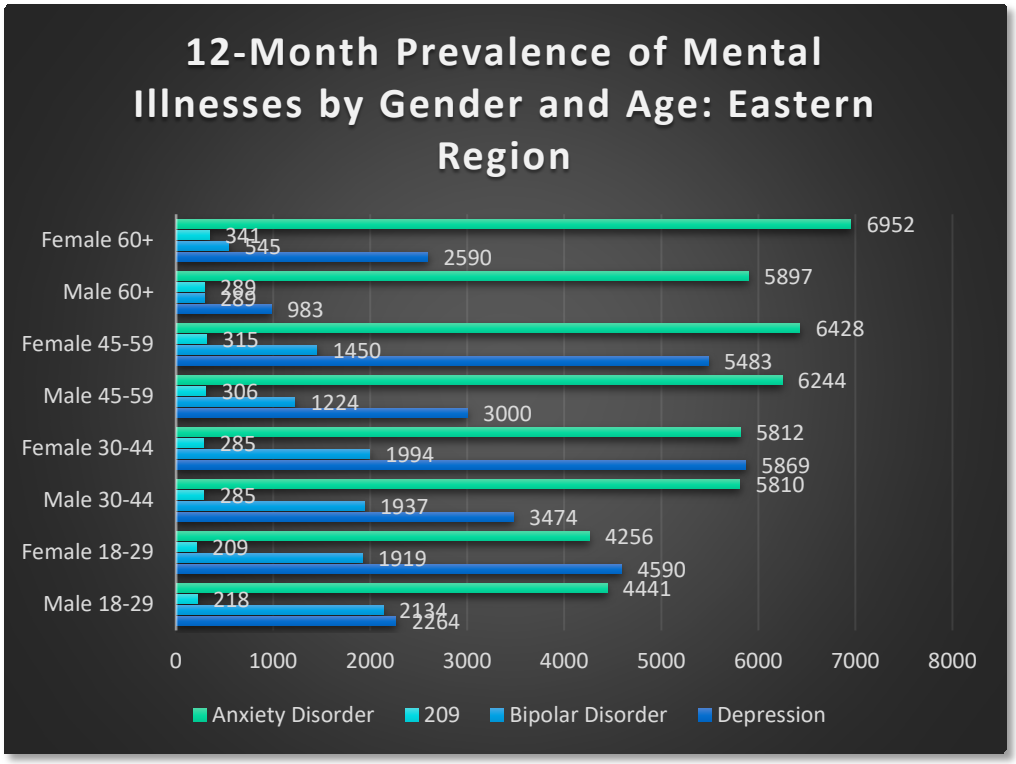
The information in this section was generated using a set of actuarial and epidemiological data applied to each Compass Health region with a set of calculators created by Health Management Associates, under commission by the Healthcare Foundation of Greater Kansas City. The estimates provided are based on peer-reviewed studies of prevalence, primarily analyses resulting from the National Comorbidity Survey Replication, which is based on a representative sample of 10,000 persons across the nation, using DSM diagnostic criteria to establish diagnoses. After adjusting for population size and gender in each county, we now have estimates for each Compass Health region of: (1) the 12-month prevalence of major depression, bipolar disorder, schizophrenia, and anxiety disorders (i.e., the number of adults likely to experience that condition in a given 12-month period); (2) the number of untreated cases of those conditions; (3) annual costs of not treating those illnesses in various sectors; and (4) who pays for those costs of untreated mental illnesses.

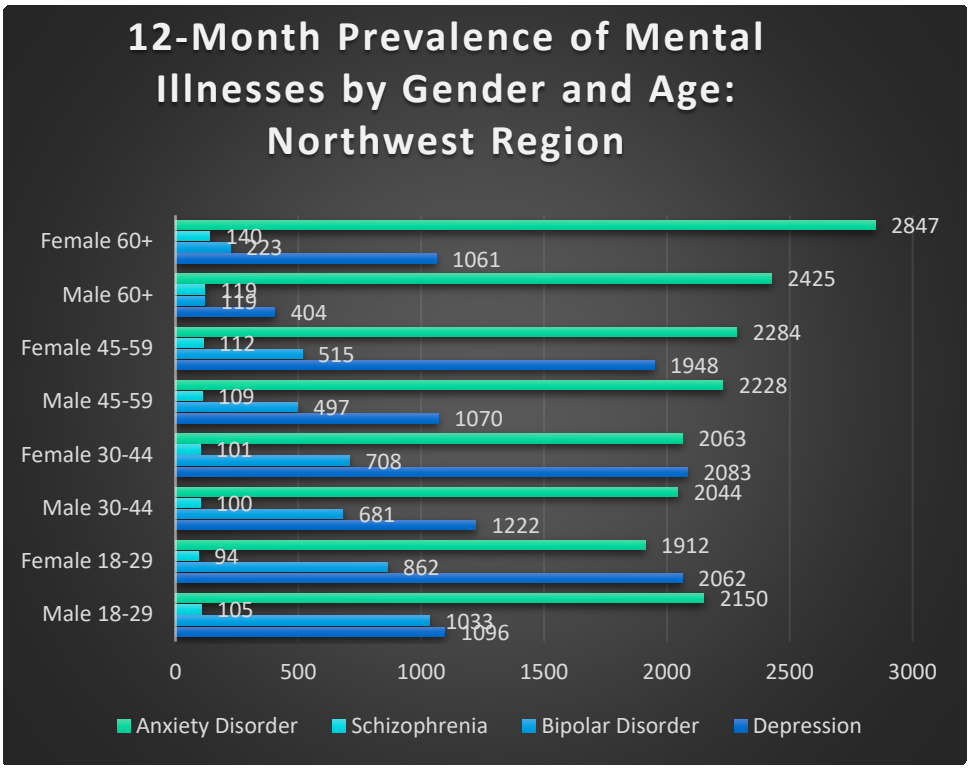
Please see References and Appendix B for literature citations and assumptions underlying these estimates and calculations.

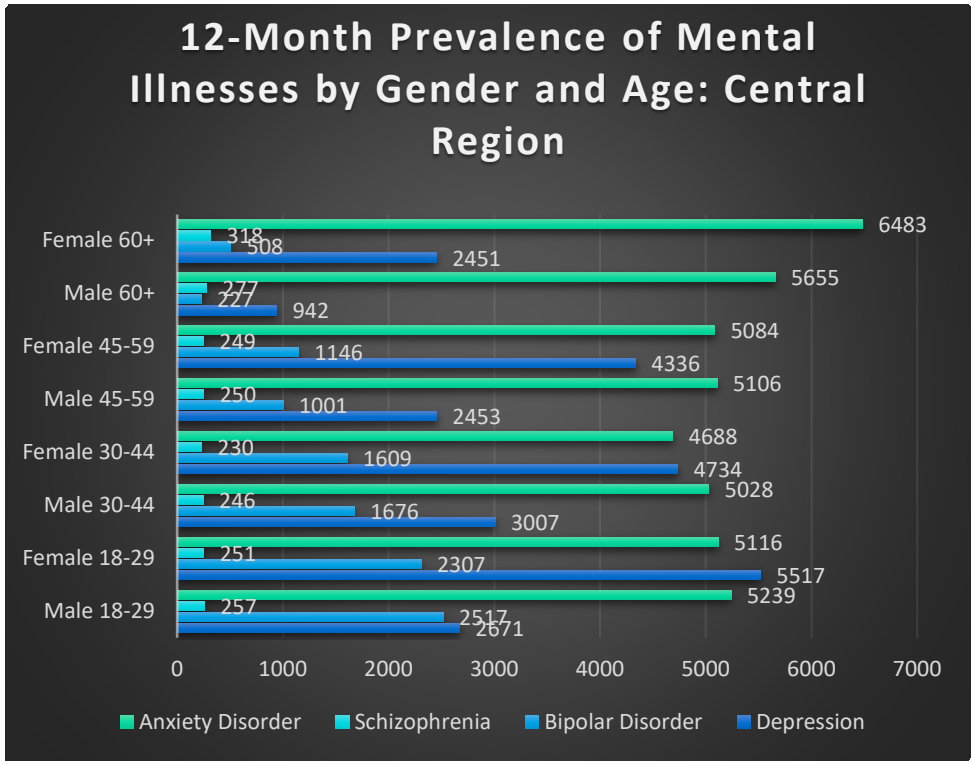
Prevalence of Major Mental Illnesses Ages 18+ by Compass Region

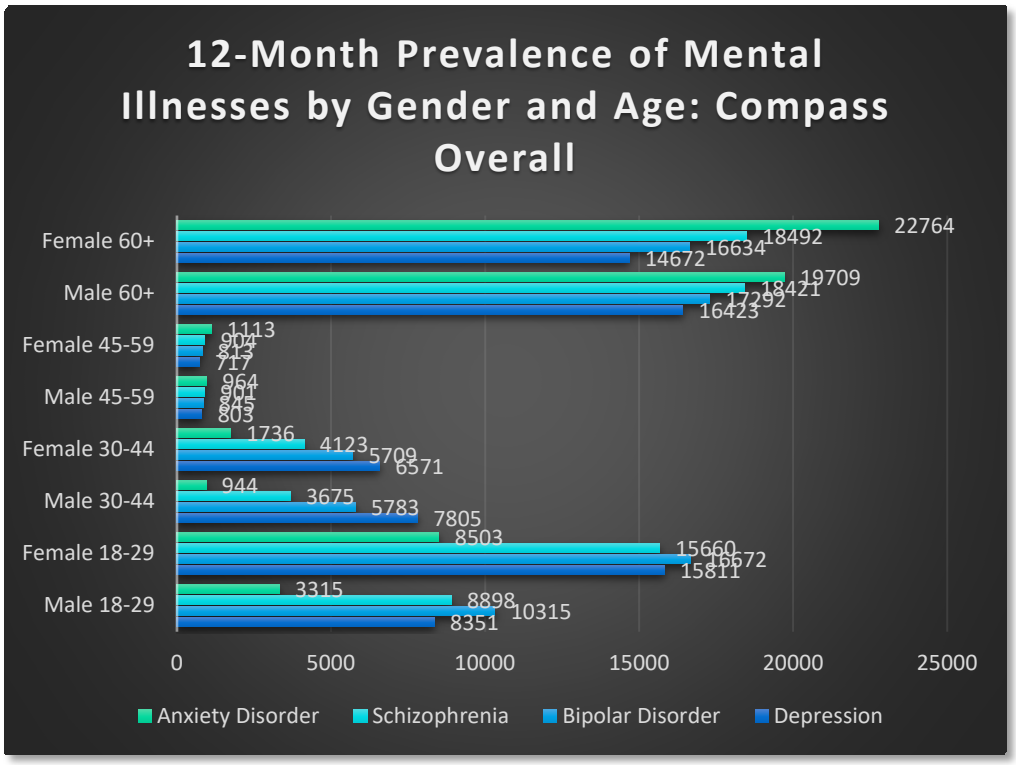





12-Month Prevalence of Mental Illnesses by Gender and Age: Eastern Region
Female 60+
Male 60+
Female 45-59
Male 45-59
Female 30-44
Male 30-44
Female 18-29
Male 18-29
341
545
2590
6952
289
289
983
5897
315
1450
5483
6428
306
1224
3000
6244
285
1994
5869
5812
285
1937
3474
5810
209
1919
4590
4256
218
2134
2264
4441
0
1000
2000
3000
4000
5000
6000
7000
8000
Anxiety Disorder
209
Bipolar Disorder
Depression


12-Month Prevalence of Mental Illnesses by Gender and Age: Northwest Region
Female 60+
Male 60+
Female 45-59
Male 45-59
Female 30-44
Male 30-44
Female 18-29
Male 18-29
140
223
1061
2847
119
119
404
2425
112
515
1948
2284
109
497
1070
2228
101
708
2083
2063
100
681
1222
2044
94
862
2062
1912
105
1033
1096
2150
0
500
1000
1500
2000
2500
3000
Anxiety Disorder
Schizophrenia
Bipolar Disorder
Depression

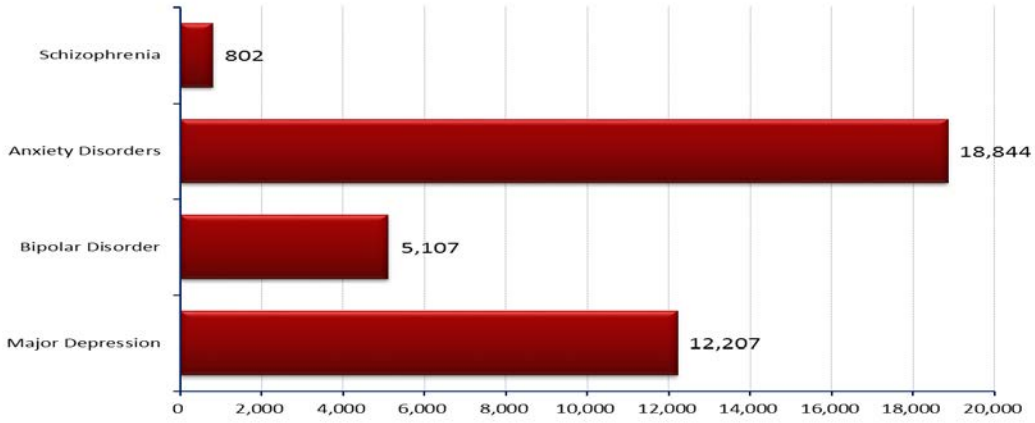

12-Month Prevalence of Mental Illnesses by Gender and Age: Central Region
Female 60+
Male 60+
Female 45-59
Male 45-59
Female 30-44
Male 30-44
Female 18-29
Male 18-29
318
508
2451
6483
277
227
942
5655
249
1146
4336
5084
250
1001
2453
5106
230
1609
4734
4688
246
1676
3007
5028
251
2307
5517
5116
257
2517
2671
5239
0
1000
2000
3000
4000
5000
6000
7000
Anxiety Disorder
Schizophrenia
Bipolar Disorder
Depression


12-Month Prevalence of Mental Illnesses by Gender and Age: Compass Overall
Female 60+
Male 60+
Female 45-59
Male 45-59
Female 30-44
Male 30-44
Female 18-29
Male 18-29
22764
18492
16634
14672
19709
18421
17292
16423
1113
904
813
717
964
901
845
803
1736
4123
5709
6571
944
3675
5783
7805
8503
15660
15672
15811
3315
8898
10315
8351
0
5000
10000
15000
20000
25000
Anxiety Disorder
Schizophrenia
Bipolar Disorder
Depression

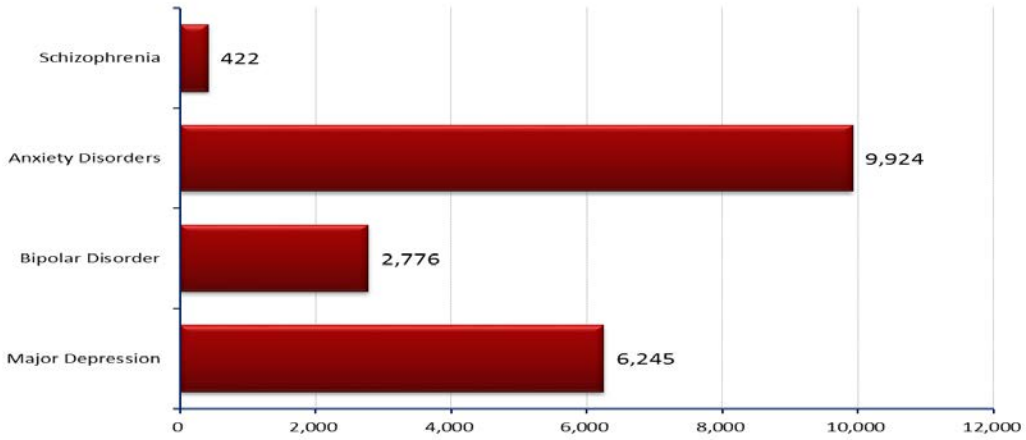
Cases of Untreated Mental Illness by Compass Region

Untreated mental illness cases are cases in which individuals diagnosed with mental illness are not receiving regular recommended treatment in order to keep their symptoms under control. Estimates vary by condition, but in general the literature shows about 40% of those with these kinds of serious mental illness do not receive consistent recommended treatment.
Those with more than one of the disorders above are "double-counted." Therefore, computing the sum of the number of cases above would not produce an accurate estimate of the total number of untreated cases. Double-counting was taken into account in all calculations of costs below, however. Literature shows about a 58% overlap between mood disorders and anxiety disorders and a 20% overlap between mood disorders and schizophrenia.

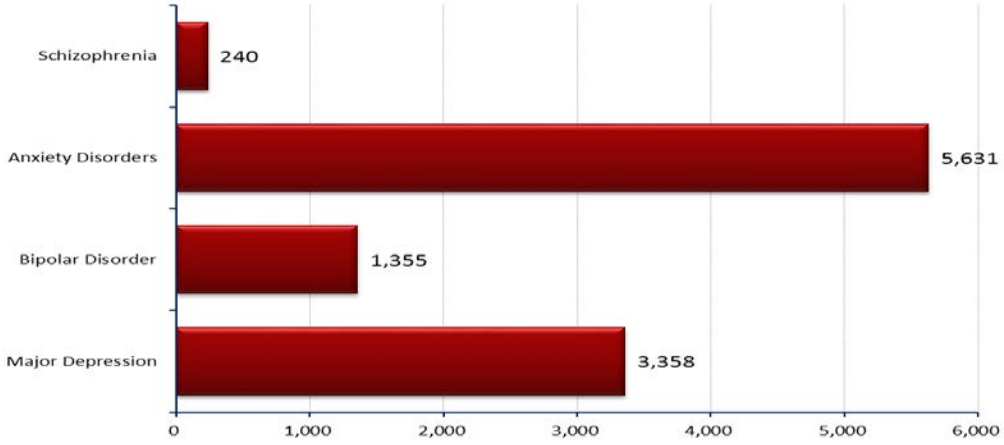
Eastern: Untreated Cases



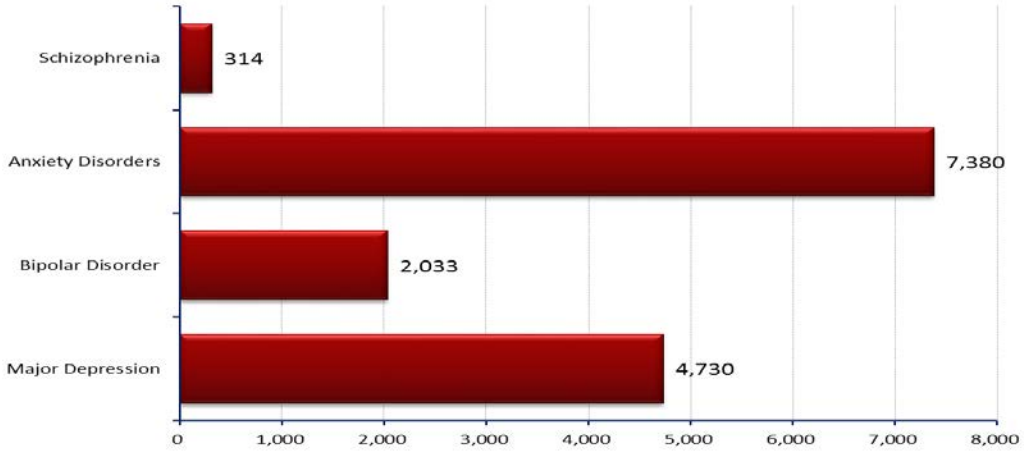
Southeast: Untreated Cases



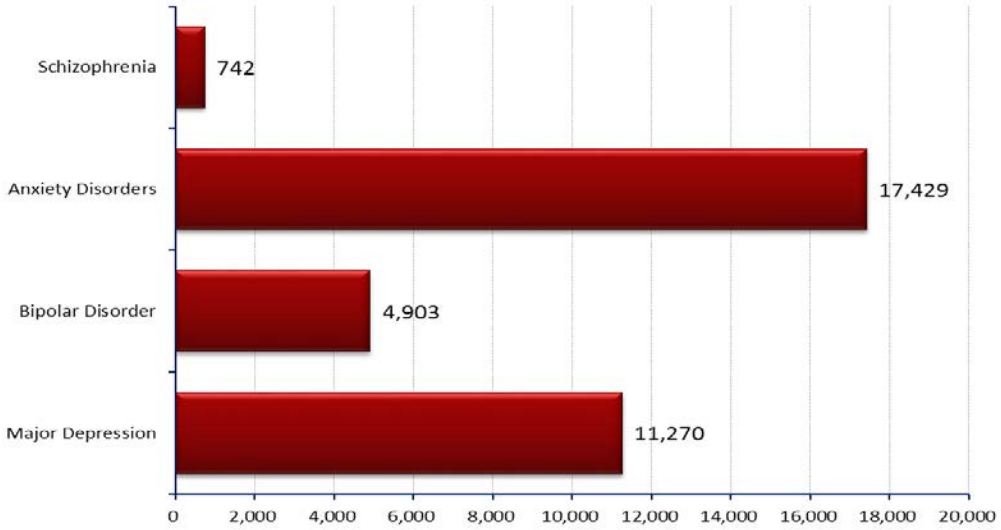
Southwest: Untreated Cases



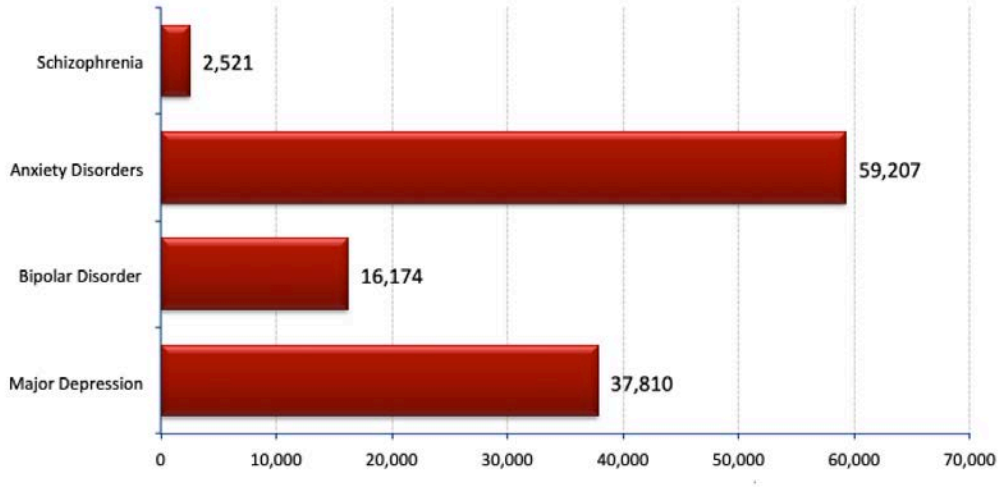
Northwest: Untreated Cases



Central: Untreated Cases



Compass Overall: Untreated Cases



Indirect Costs of Untreated Mental Illness by Compass Region

The following cost estimates are built on peer-reviewed studies (Appendix B) of the impact of untreated mental illness in the following areas: (1) absenteeism: time entirely absent from work; (2) presenteeism: time while at work but below normal productivity due to illness; (3) lost earnings due to unemployment: wages that could have been under normal circumstances (given normal unemployment rates); and (4) lost earnings due to premature death by suicide: Income that would have been earned if each suicide case had worked to retirement age. Following are some of the detailed assumptions underlying the calculations:

40% **Percent of suicides attributed to mental illness**

The National Violent Death Reporting System, 2009 data, reported that 41.8% of suicides had "current depressed mood" and 44.9% had "current mental health problem" (not mutually exclusive). We conservatively estimate that 40% of suicides are attributable to mental illness. Previous cost of illness studies have attributed anywhere from 10% - 60% of suicides to mental illness. The upper end of that range has been more common.

7.4% **Incarceration Rate for cases of untreated mental illness**

Estimates vary across studies, but those with mental illness are about 10 times more likely to be incarcerated compared to the general population.

89.2% **Percent of homeless with mental illness who are untreated**

Culhane et al. (1998) found that only 10.8% of homeless with mental illness were receiving treatment; 89.2% were untreated.

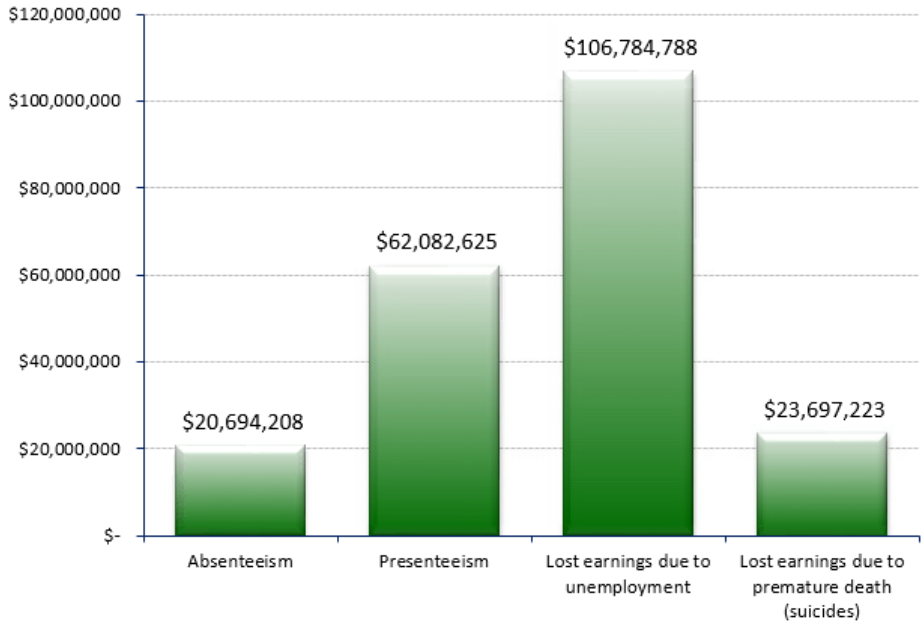
9% **Increased unemployment rate in cases with untreated mood disorders**

10% **Increased unemployment rate in cases with untreated anxiety disorders**

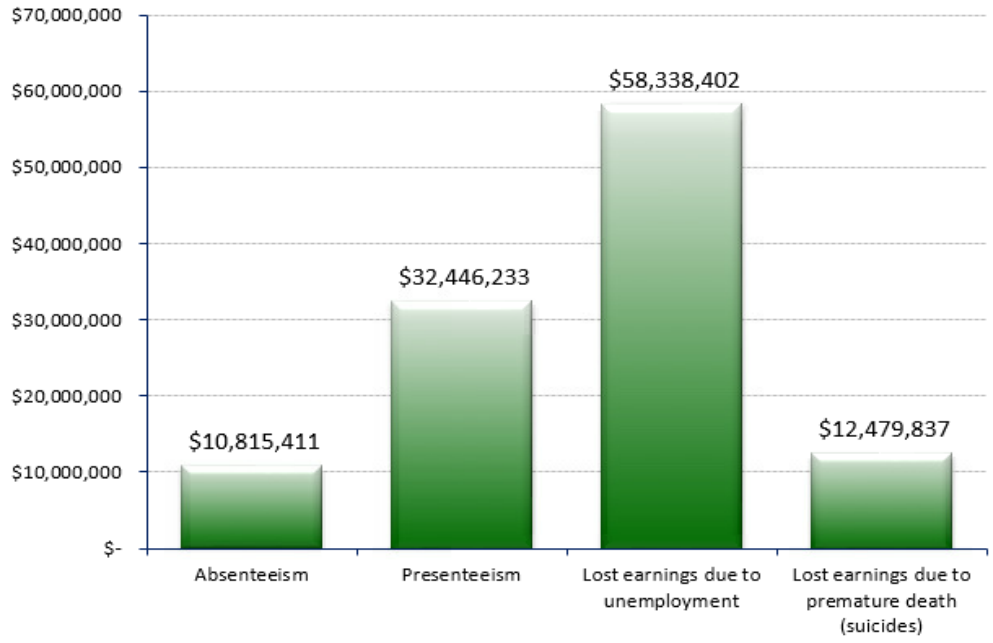
25% **Increased unemployment rate in cases with untreated schizophrenia**

These percentages are the expected unemployment rate above and beyond the unemployment rate in the general population. Research has shown unemployment rates higher than the default values used here, but more conservative estimates are used due to methodological issues with the studies.

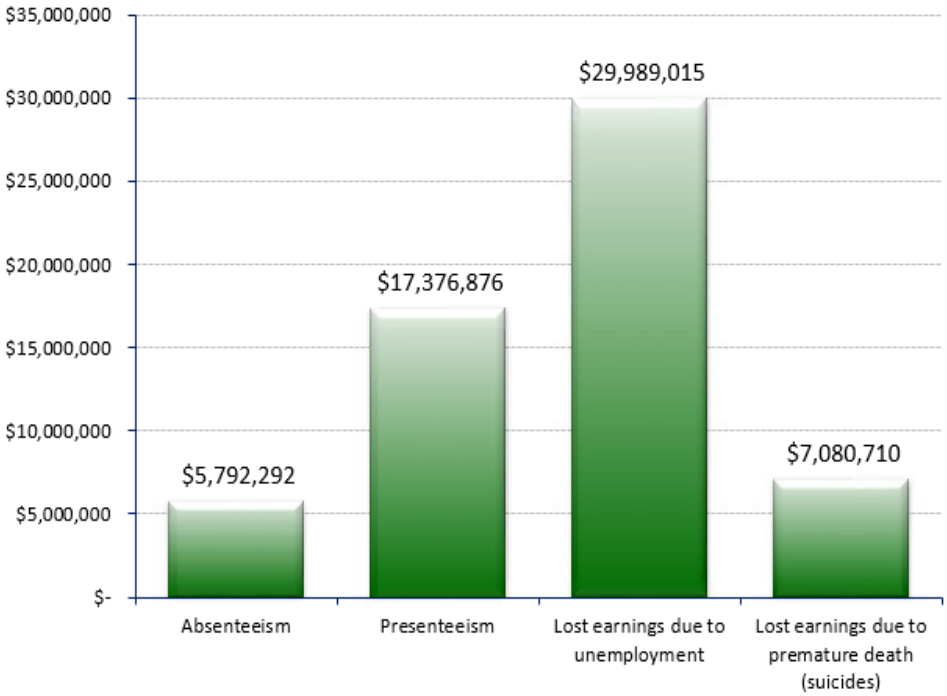
Eastern: Indirect Costs



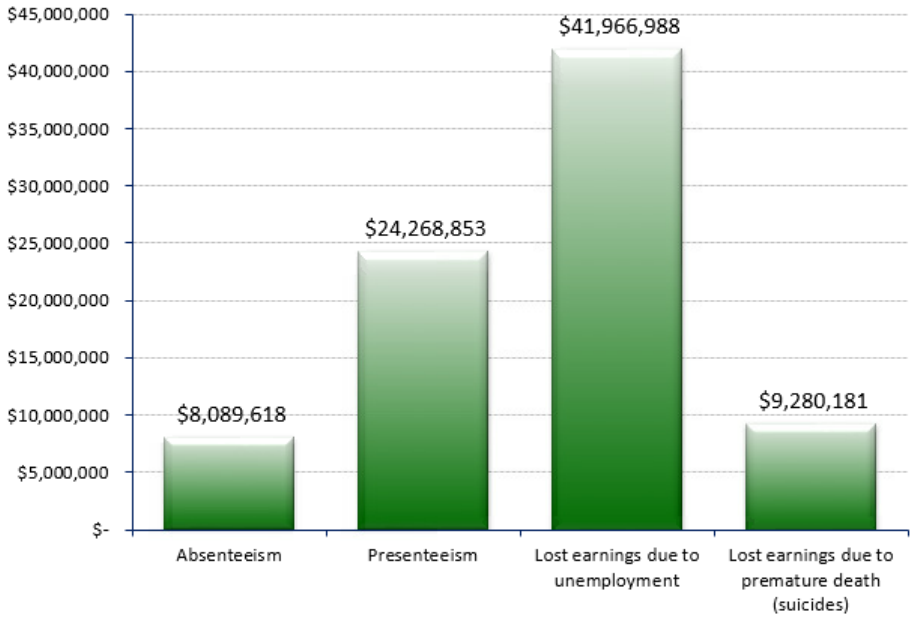
Southeast: Indirect Costs



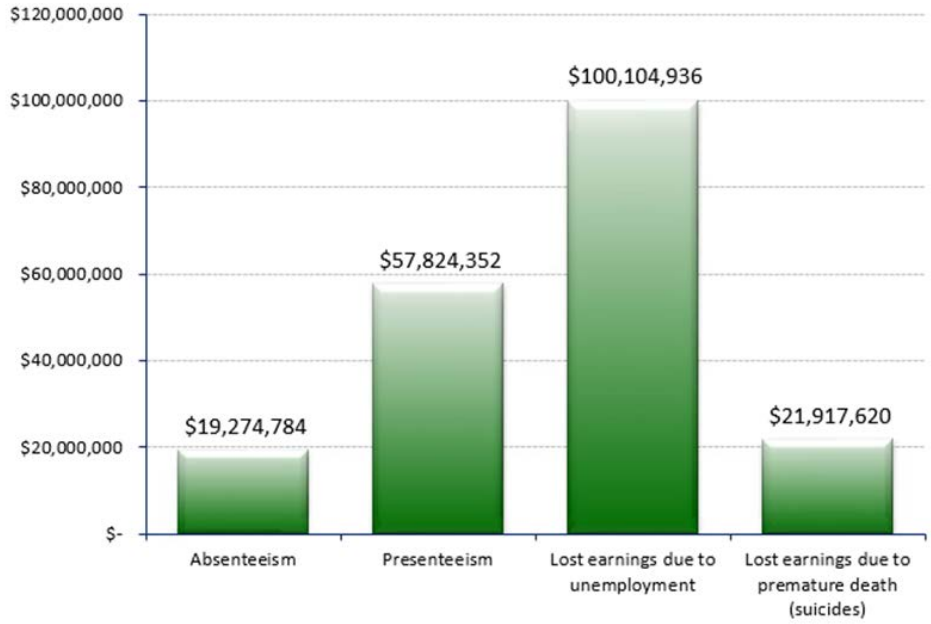
Southwest: Indirect Costs



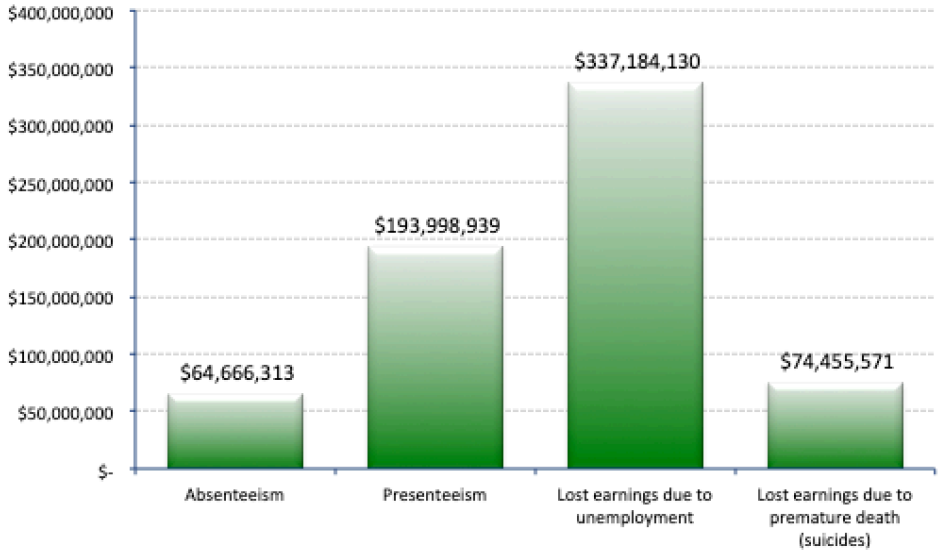
Northwest: Indirect Costs



Central: Indirect Costs



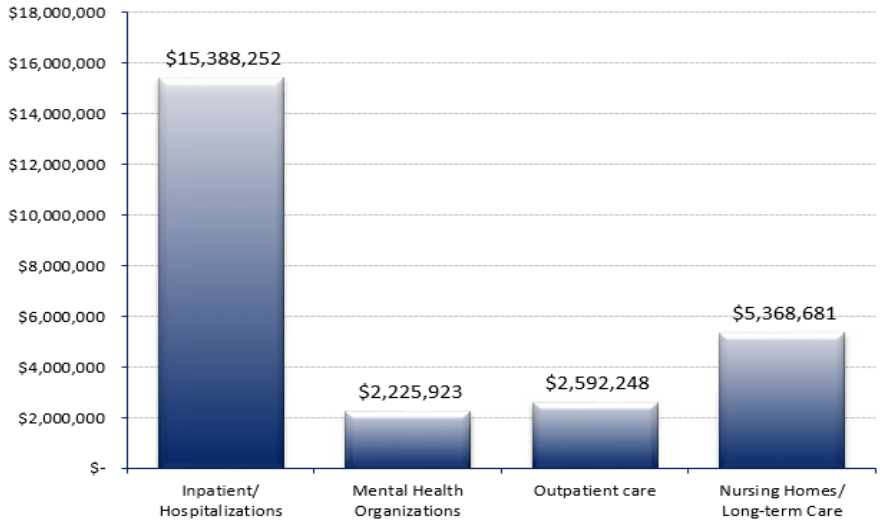
Compass Overall: Indirect Costs



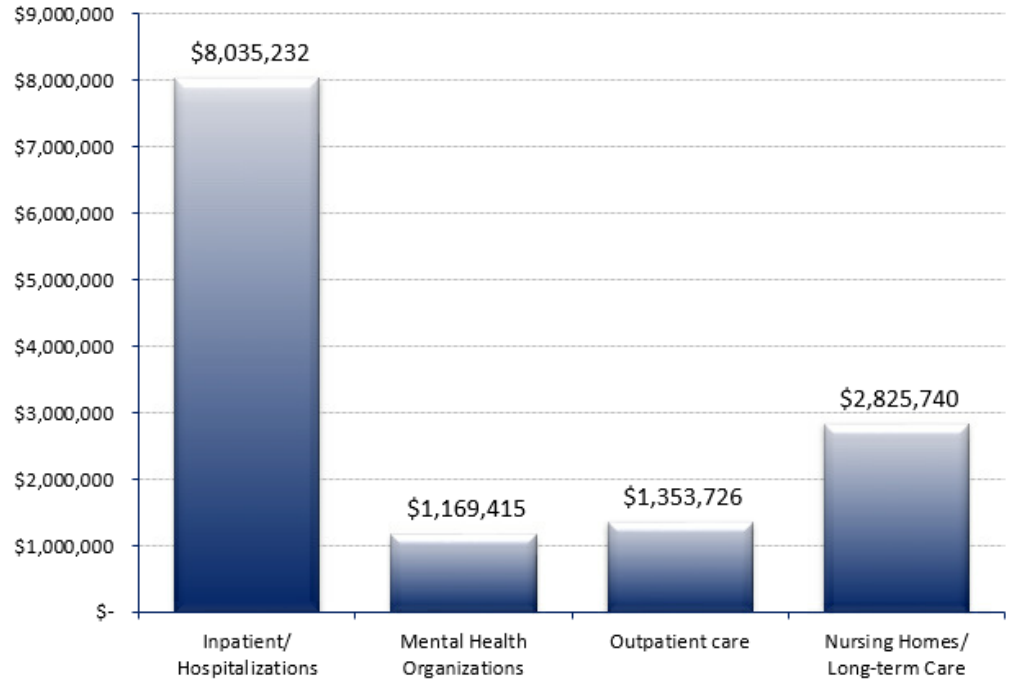
Direct Medical Costs of Untreated Mental Illness by Compass Region

Untreated mental illness results in medical costs above and beyond what regular treatment would cost, due to “crisis treatment” and comorbid conditions that occur with severe mental illness. The cost estimates in this analysis are based on costs related to: (1) inpatient care/ hospitalizations: costs for patients who are admitted to hospitals; (2) mental health organizations: costs for patients who visit community mental health facilities dedicated to relatively short-term treatment of mental illness (also includes costs dedicated to local, state, and national organizations shuch as NAMI); (3) outpatient care: costs for patients who are not admitted to hospitals or long-term care centers; includes ER visits; and (4) nursing homes/long-term care: costs for patients who are given care in nursing homes or long-term care facilites.

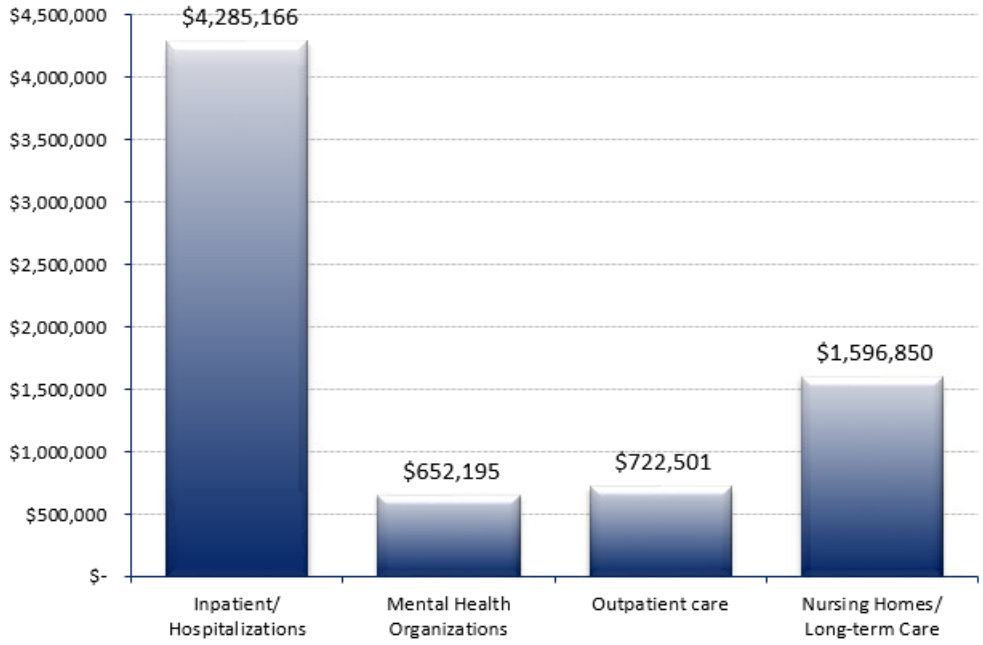
Eastern: Direct Medical Costs



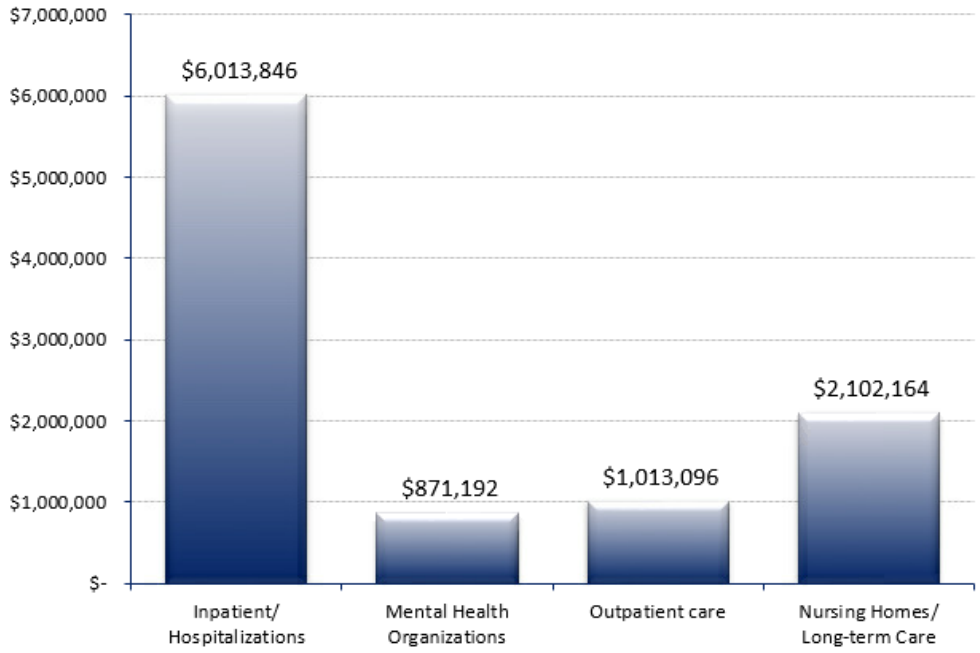
Southeast: Direct Medical Costs



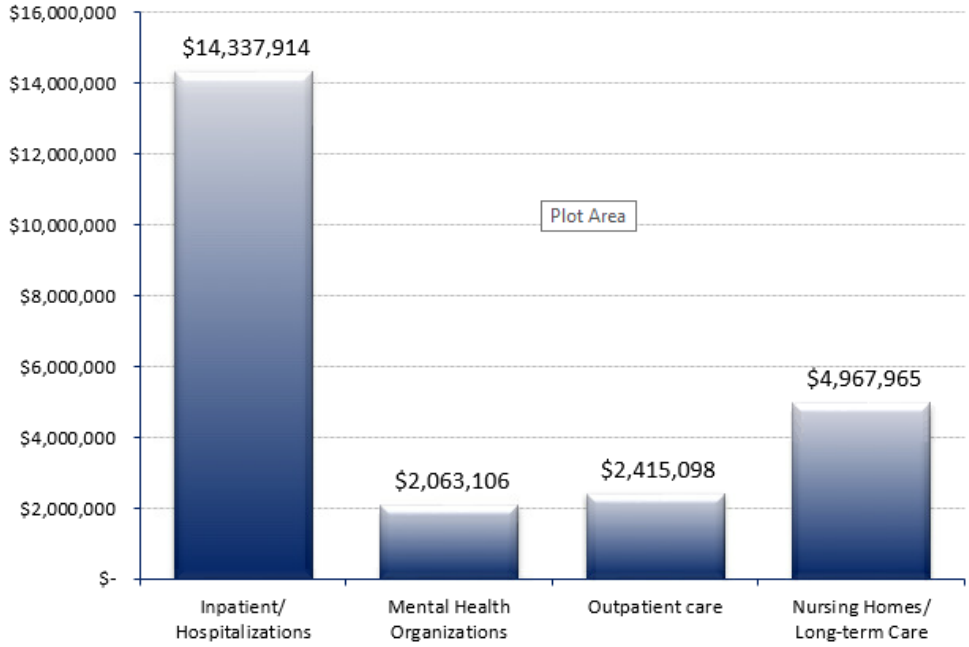
Southwest: Direct Medical Costs



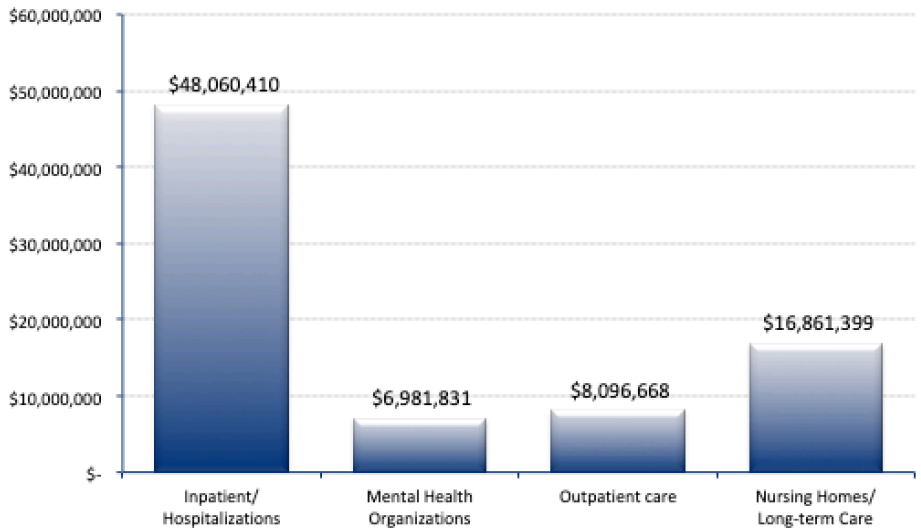
Northwest: Direct Medical Costs



Central: Direct Medical Costs



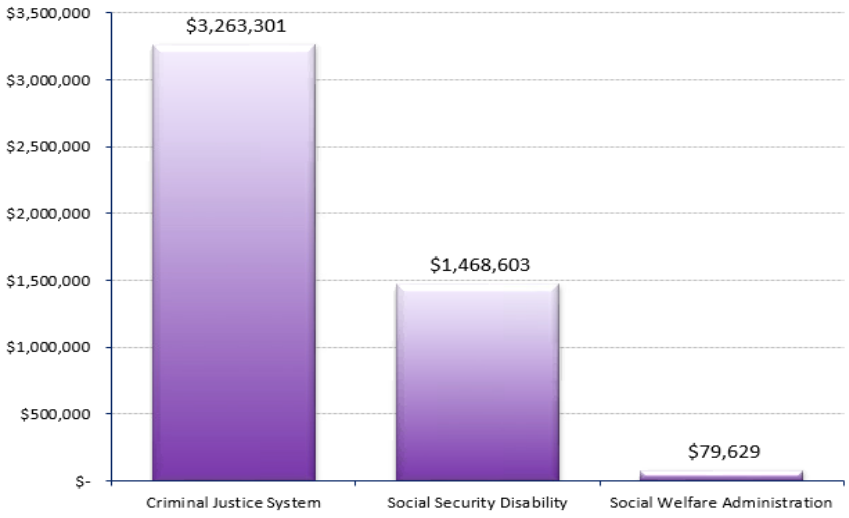
Compass Overall: Direct Medical Costs



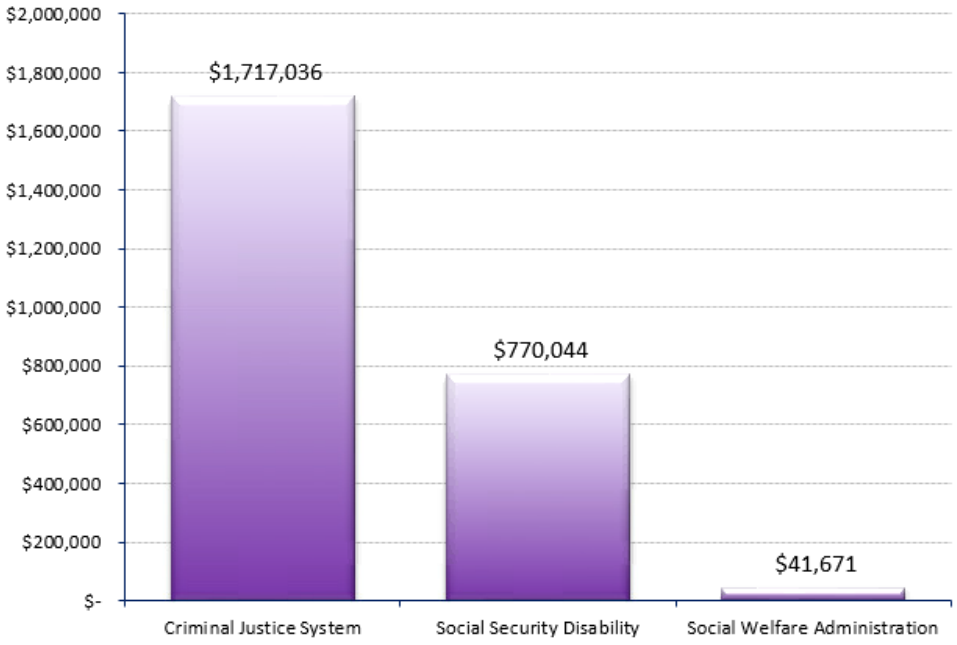
Other Costs of Untreated Mental Illness

Untreated mental illness results in still other costs illustrated in the graphs below, including the following: (1) criminal justice system: costs incurred for law enforcement and the judicial system for criminal behavior due to lack of treatment; (2) Social Security disability: estimated Federal Supplemental Security Income paid to patients whose conditions are not controlled by treatment; and (3) social welfare administration: administrative costs for Social Security and other government programs to assist untreated mental illness patients.

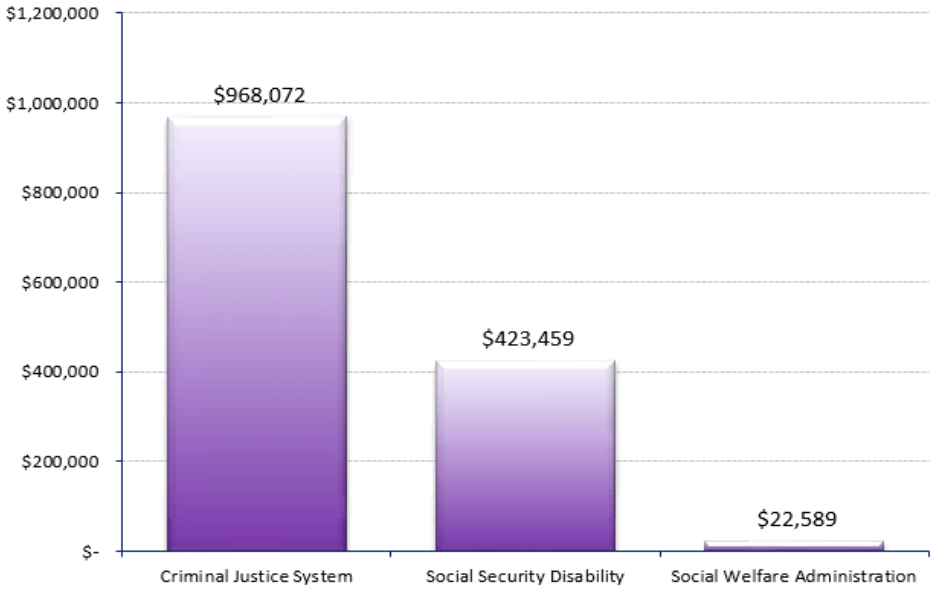
Eastern: Other Costs



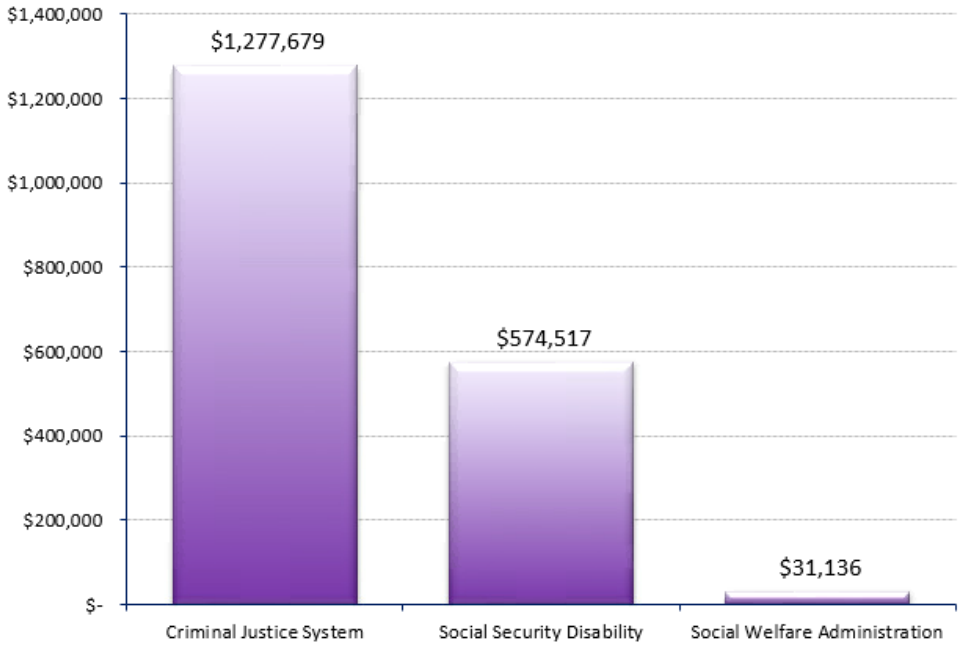
Southeast: Other Costs



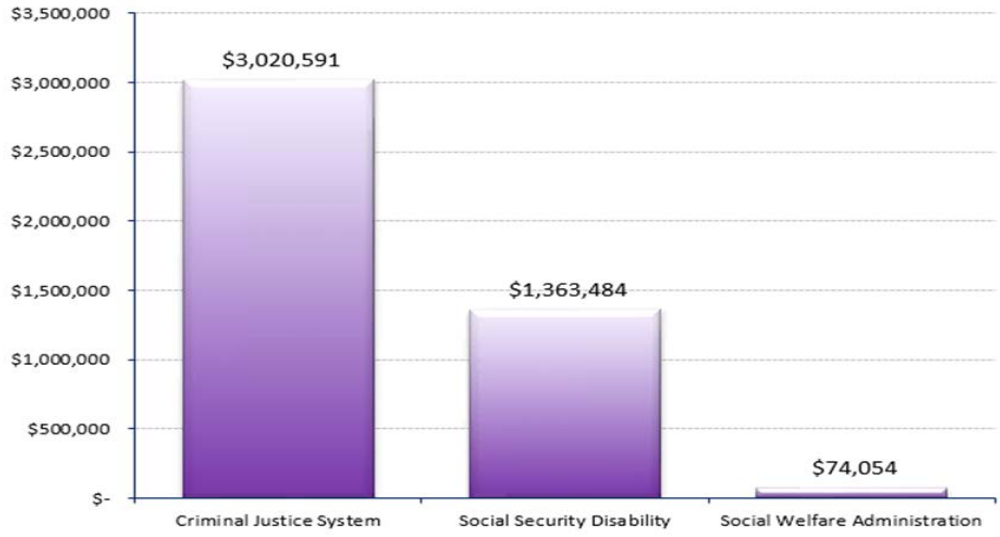
Southwest: Other Costs



Northwest: Other Costs



Central: Other Costs



Compass Overall: Other Costs

Other Outcomes of Untreated Mental Illness

Finally, less obvious – but sometimes more severe – consequences to untreated mental illness affect Compass Health communities. These consequences include suicide, incarceration, and employability. The estimated frequencies of these outcomes are listed below, broken out by Compass region.

Eastern

- 27 Suicides
- 4,520 Incarcerations
- 5,956 Unemployed Adults

Northwest

- 11 Suicides
- 1,767 Incarcerations
- 2,329 Unemployed Adults

Southeast

- 14 Suicides
- 2,363 Incarcerations
- 3,116 Unemployed Adults

Central

- 25 Suicides
- 4,207 Incarcerations
- 5,540 Unemployed Adults

Southwest

- 8 Suicides
- 1,272 Incarcerations
- 1,685 Unemployed Adults

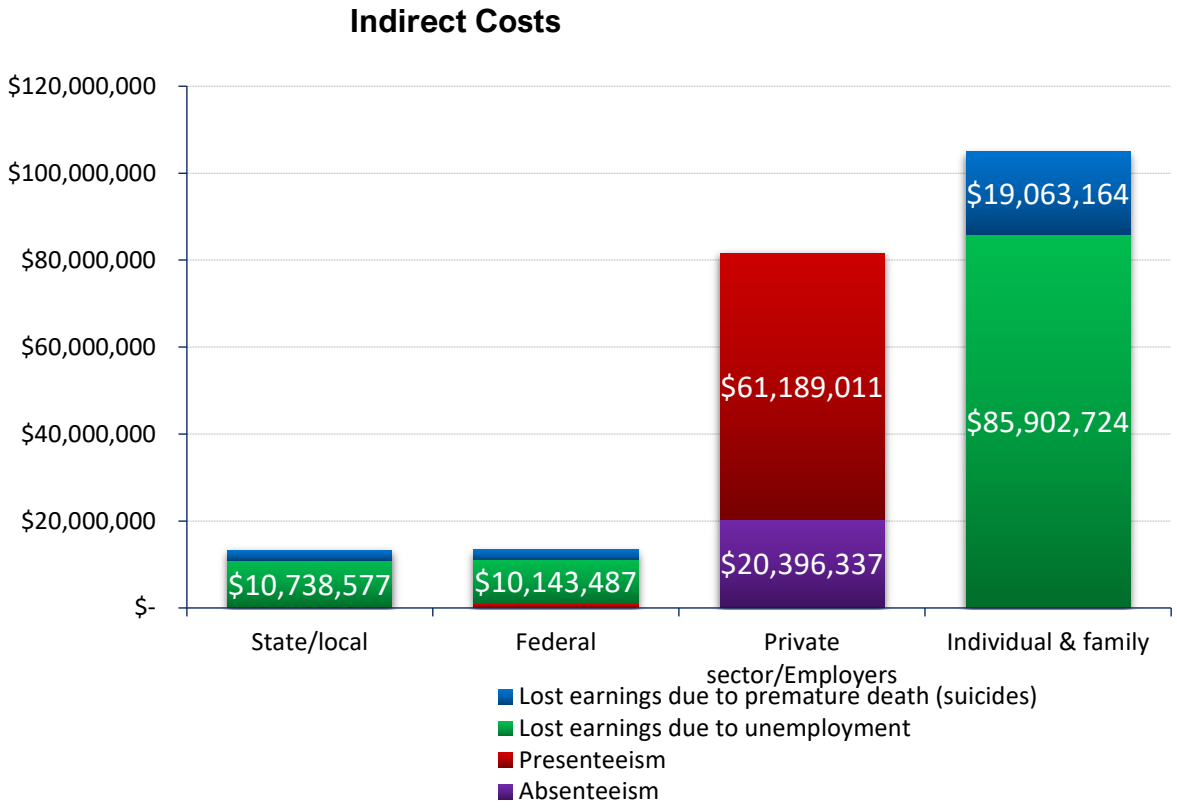
Total in Compass Health Regions

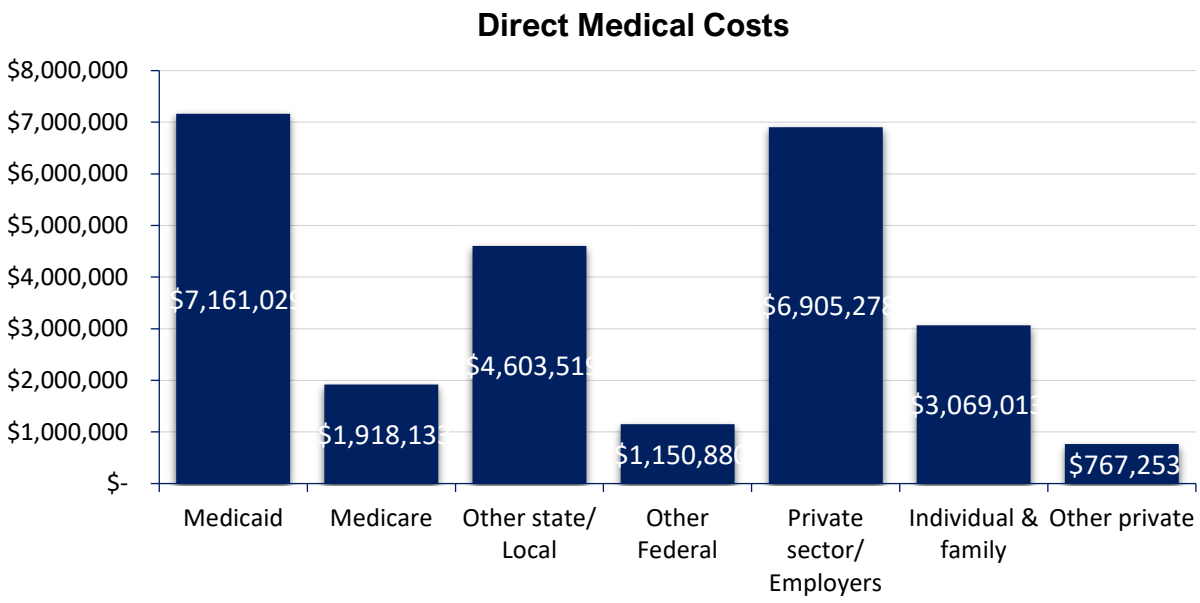
- 85 Suicides
- 14,129 Incarcerations
- 18,626 Unemployed Adults

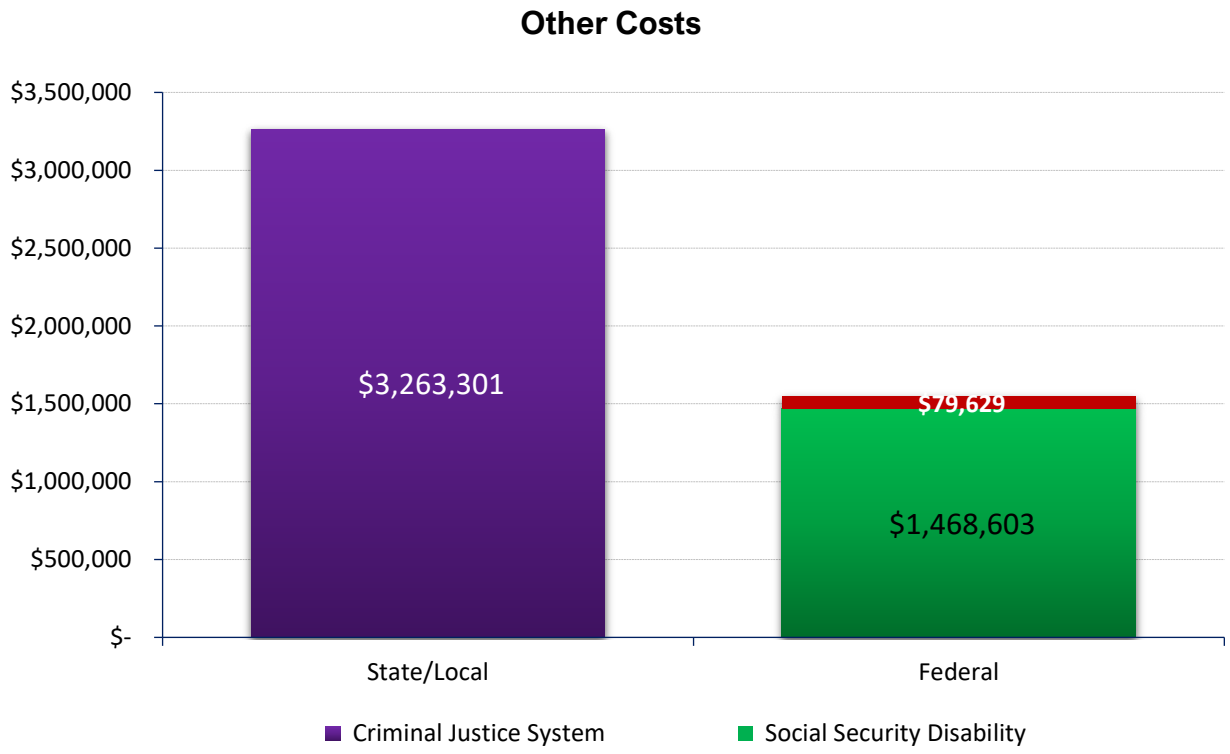
Who Pays for Untreated Mental Illness (by Compass Region)

The previous charts have presented the costs of untreated mental illness, and part of needs assessment must be about determining who is paying for those costs. The following charts break these costs down between employers, individuals, Medicaid, Medicare, and state, local, and Federal governments.

Eastern




Direct Medical Costs
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$-
$7,161,02
$1,918,13
$4,603,51
$1,150,88
$6,905,27
$3,069,01
$767,253
Medicaid
Medicare
Other state/ Local
Other Federal
Private sector/ Employers
Individual & family
Other private


Other Costs
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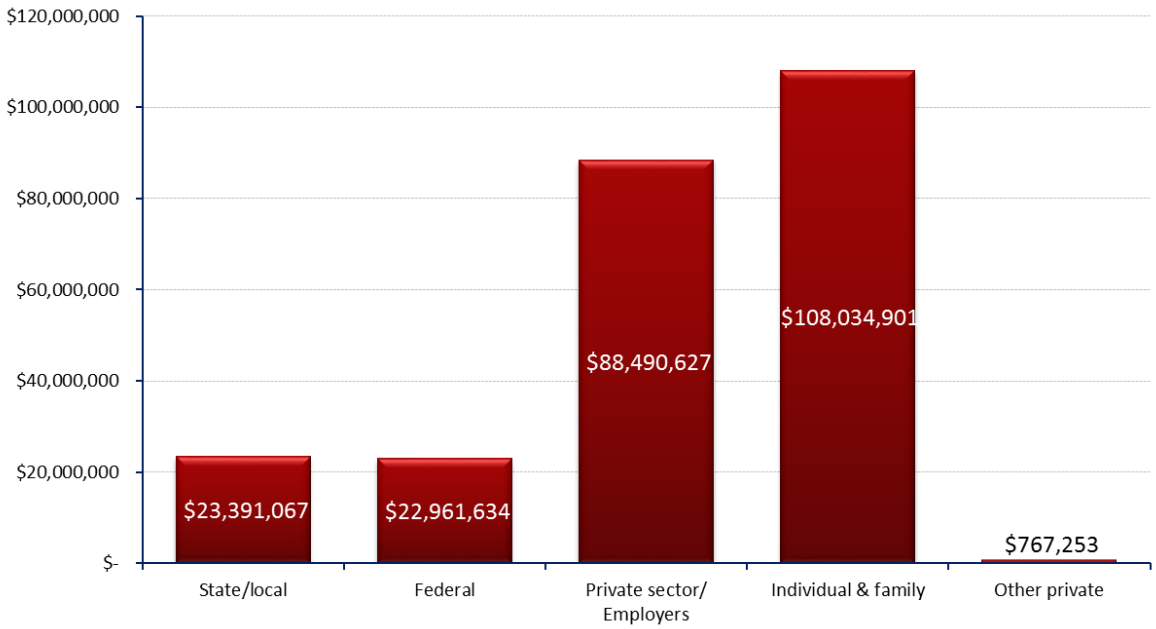
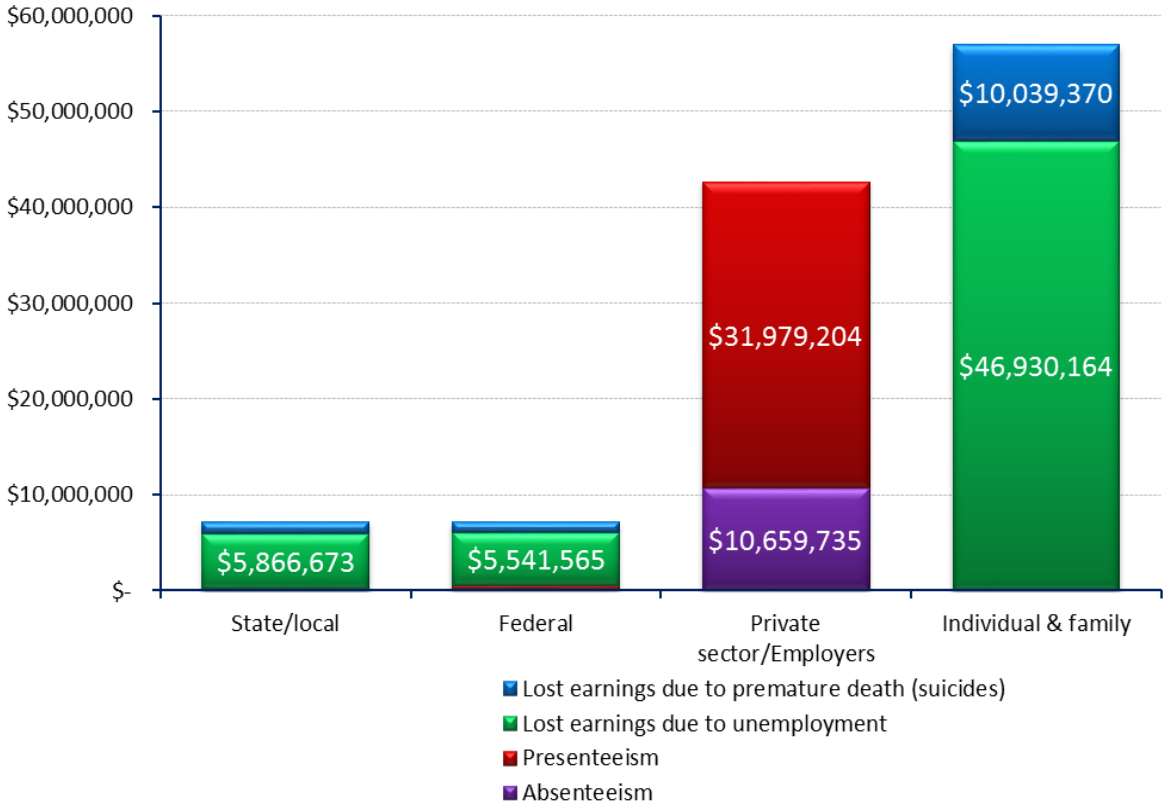
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$-
$3,263,301
$79,629
$1,468,603
State/Local
Federal
Criminal Justice System
Social Security Disability

Total Costs

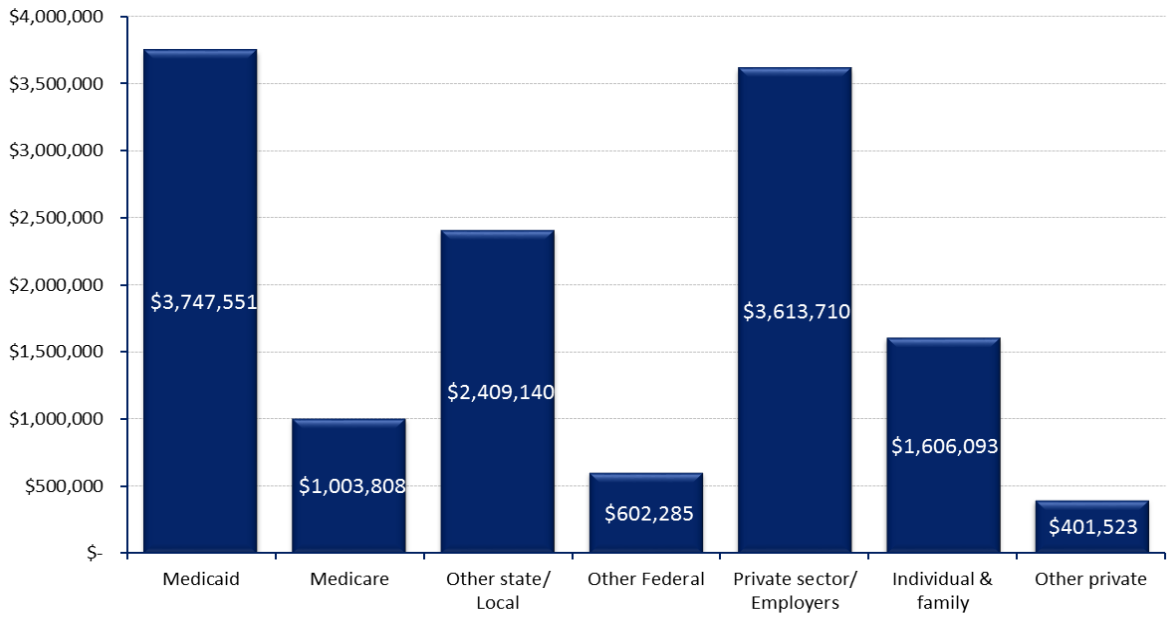


Southeast

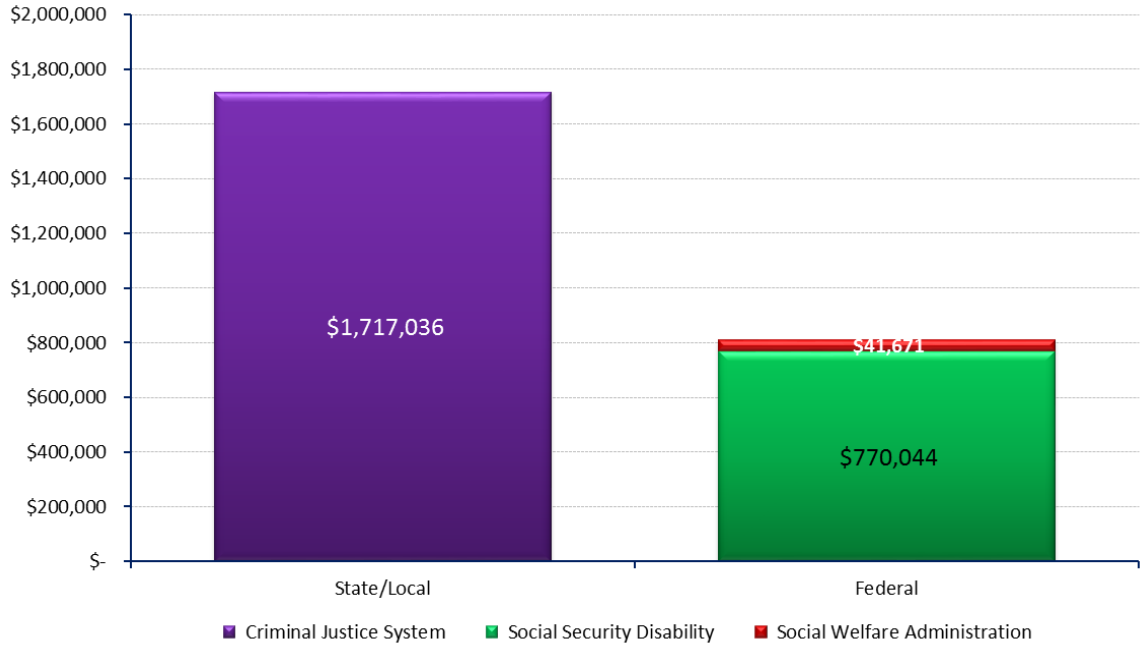
Indirect Costs



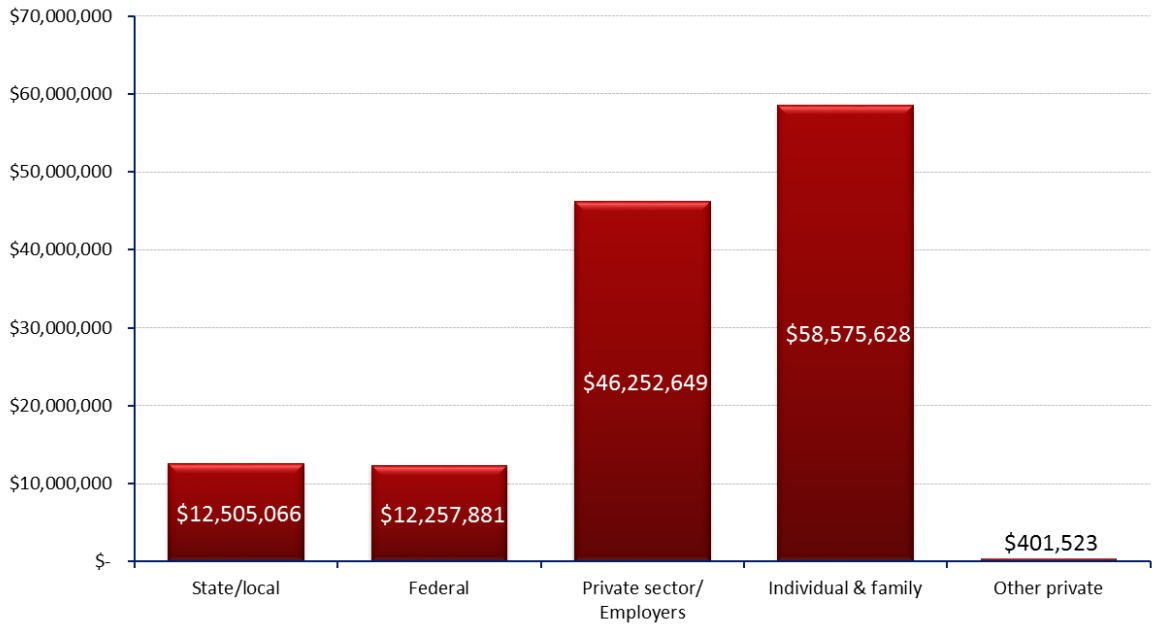
Direct Medical Costs



Other Costs

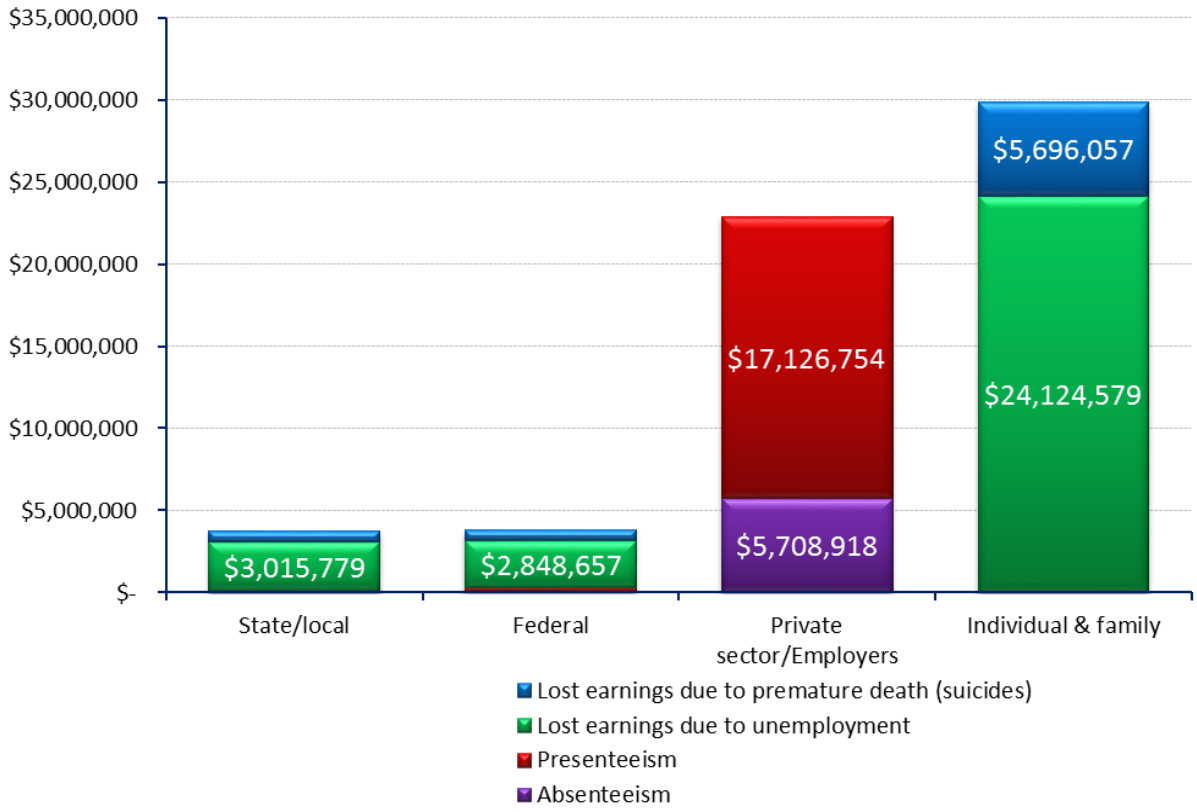


Total Costs

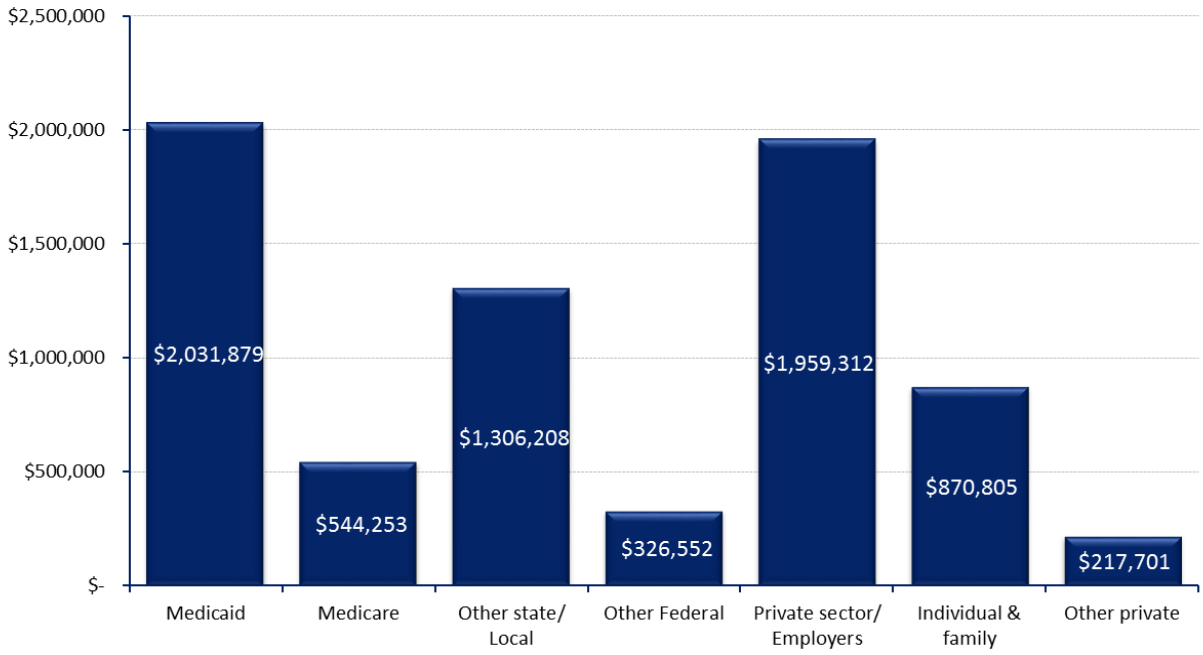


Southwest

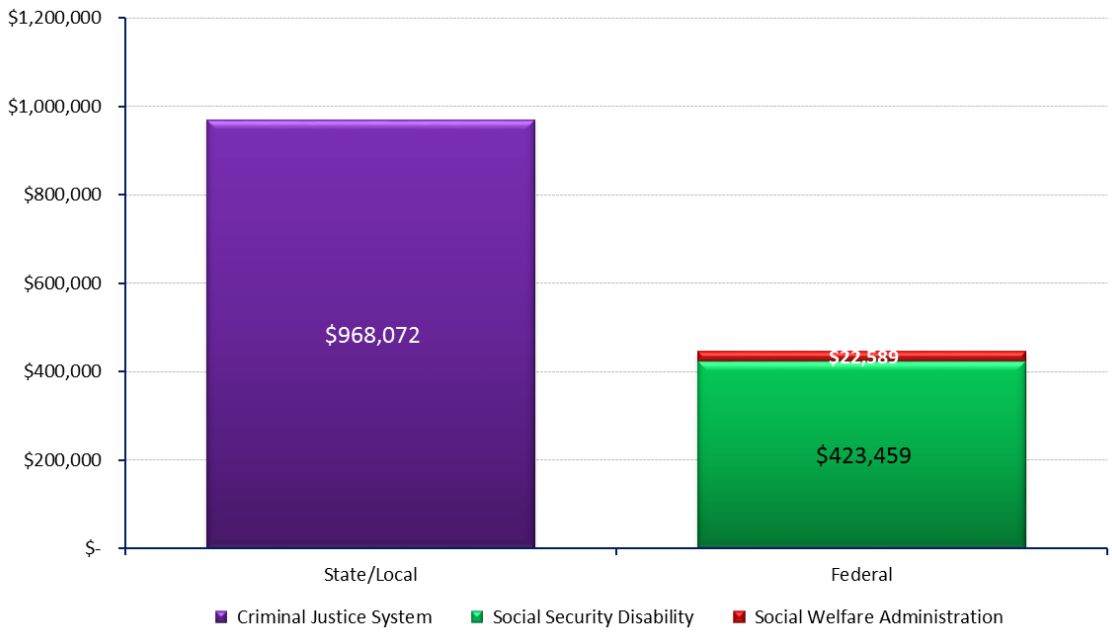
Indirect Costs

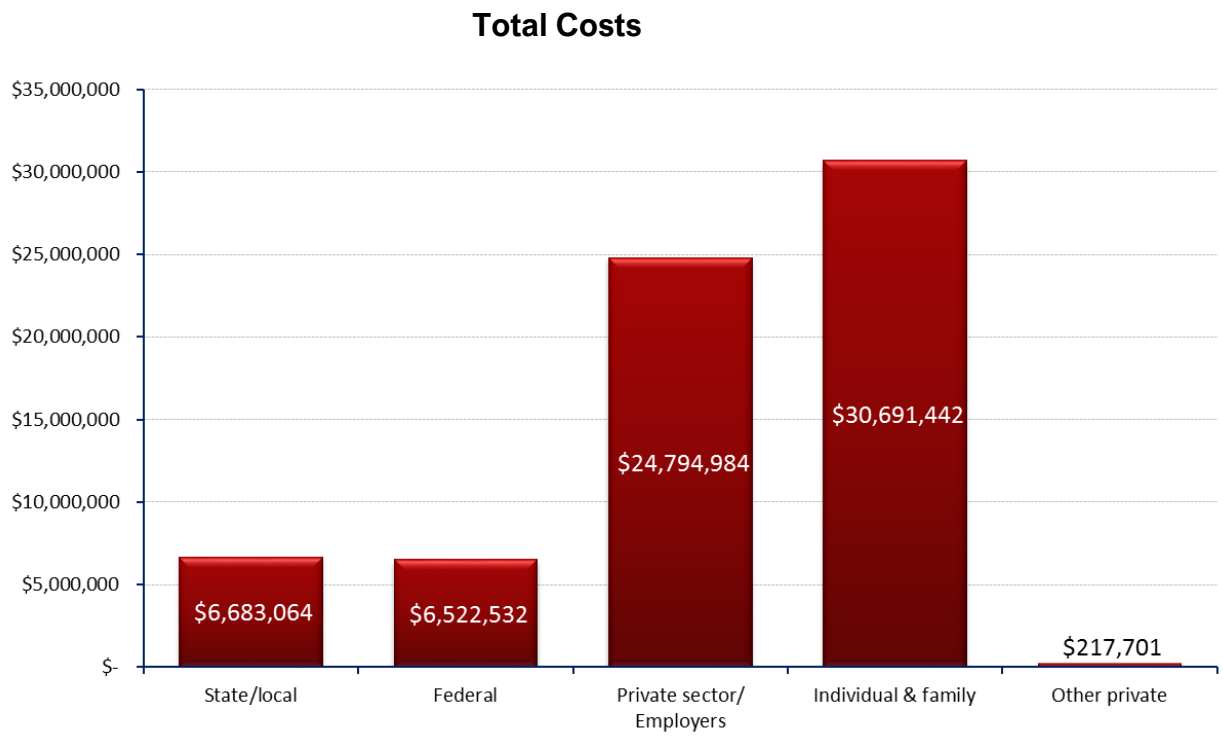


Direct Medical Costs



Other Costs




Total Costs
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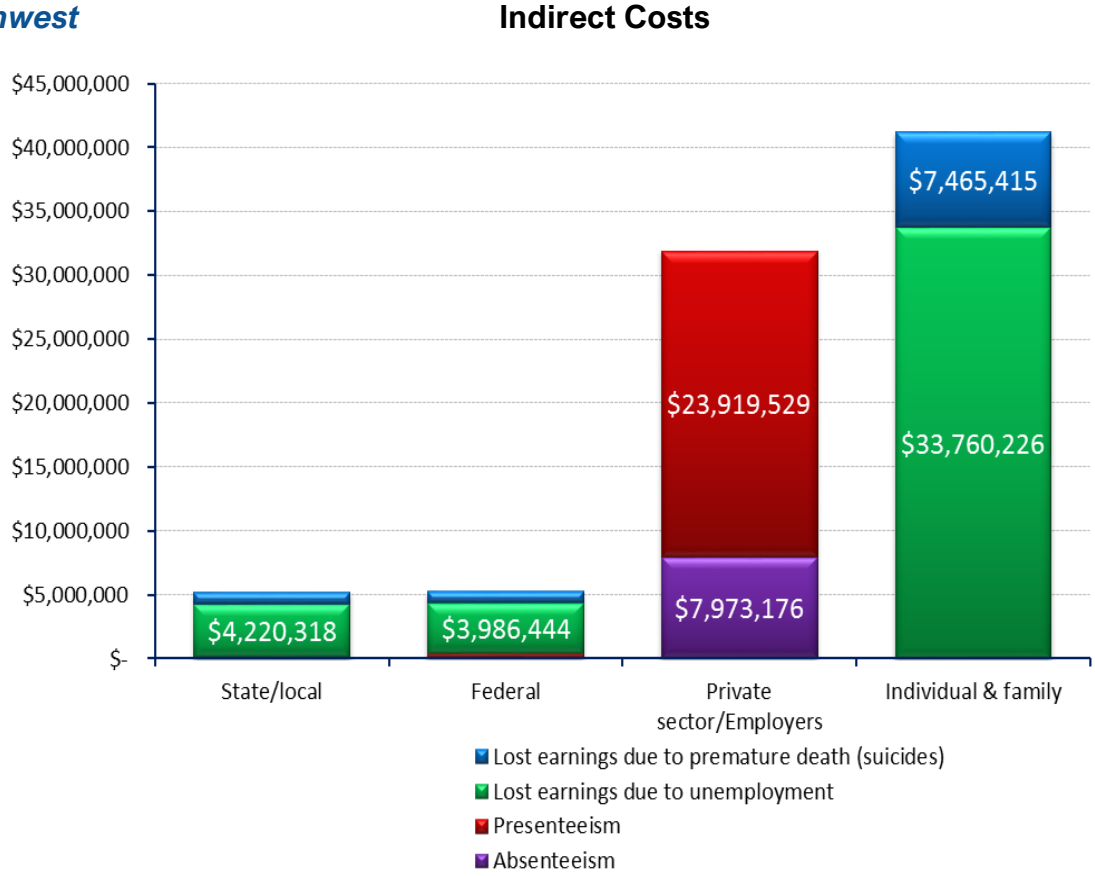
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$-
$6,683,064
$6,522,532
$24,794,984
$30,691,442
$217,701
State/local
Federal
Private sector/ Employers
Individual & family
Other private

Northwest


Indirect Costs
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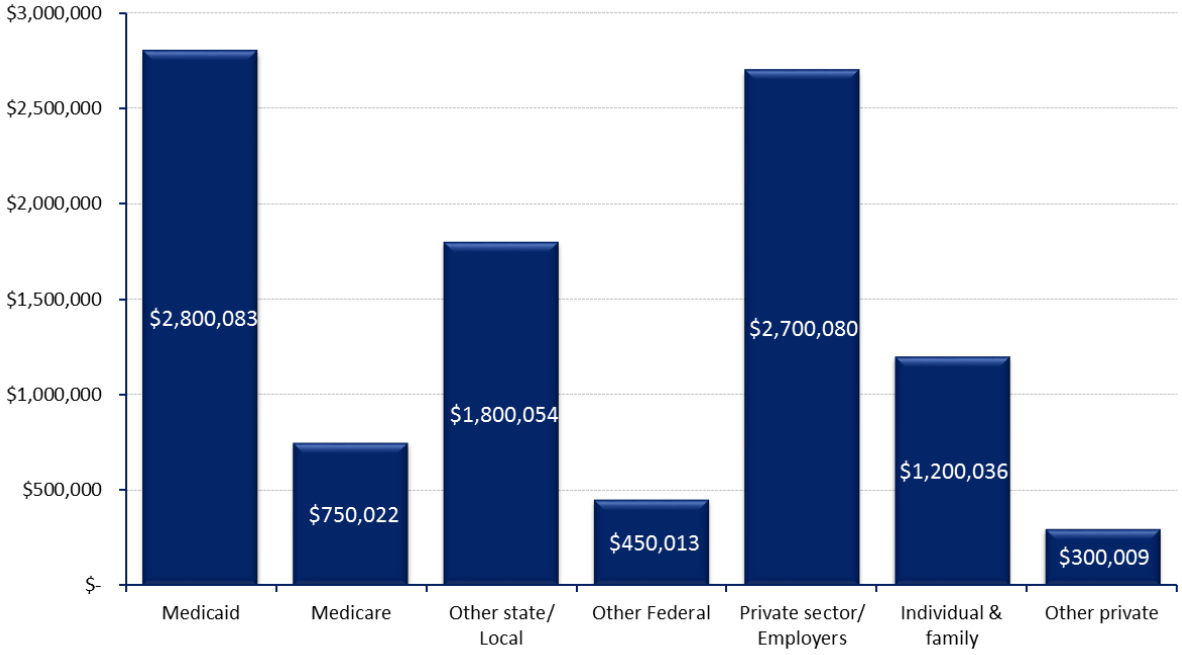
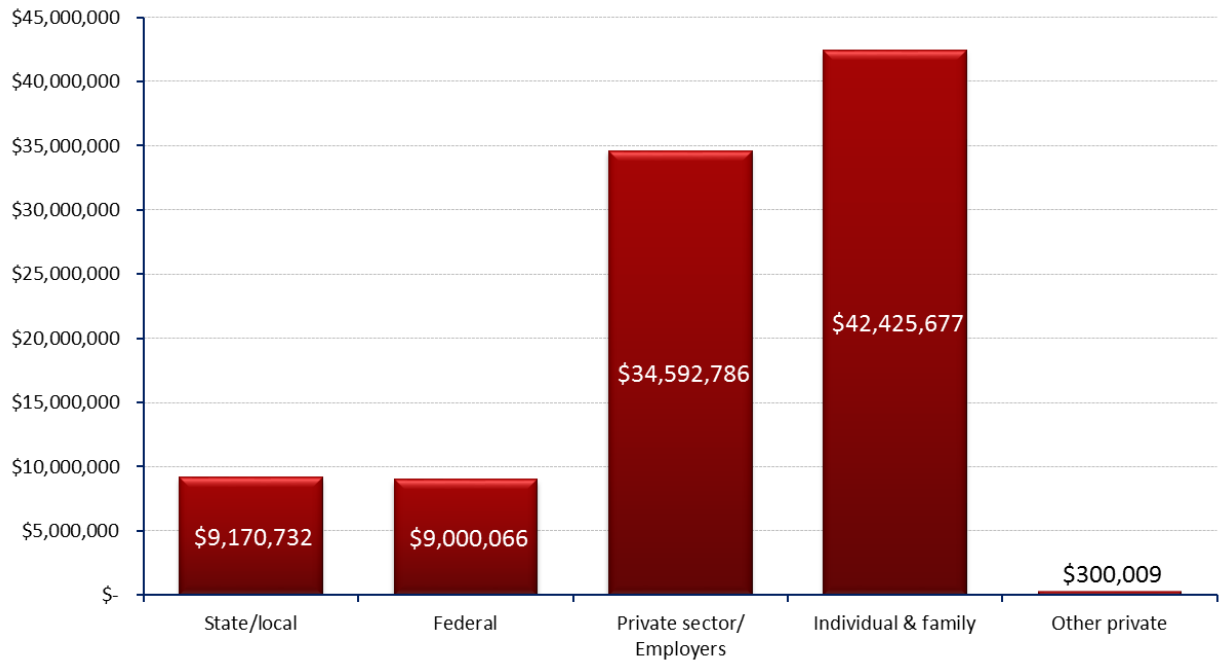
$40,000,000
$35,000,000
$30,000,000
$25,000,000
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$-
$4,220,318
$3,986,444
$23,919,529
$7,973,176
$7,465,415
$33,760,226
State/local
Federal
Private sector/Employers
Individual & family
Lost earnings due to premature death (suicides)
Lost earnings due to unemployment
Presenteeism
Absenteeism

Direct Medical Costs



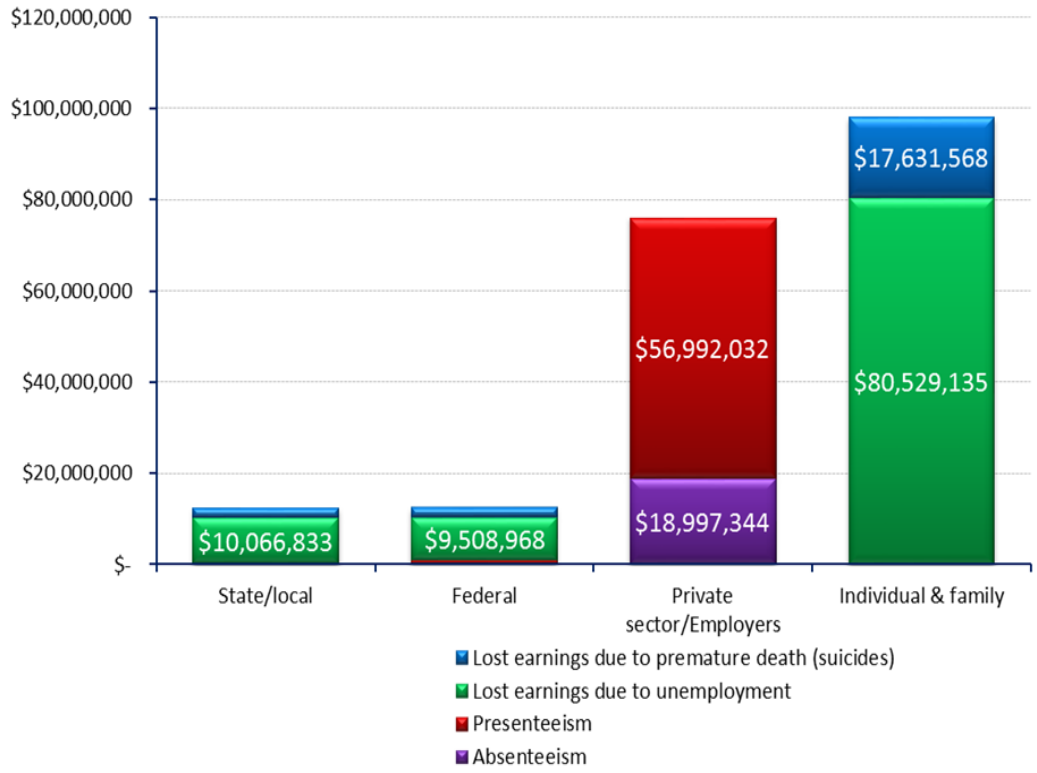
Other Costs

Total Costs

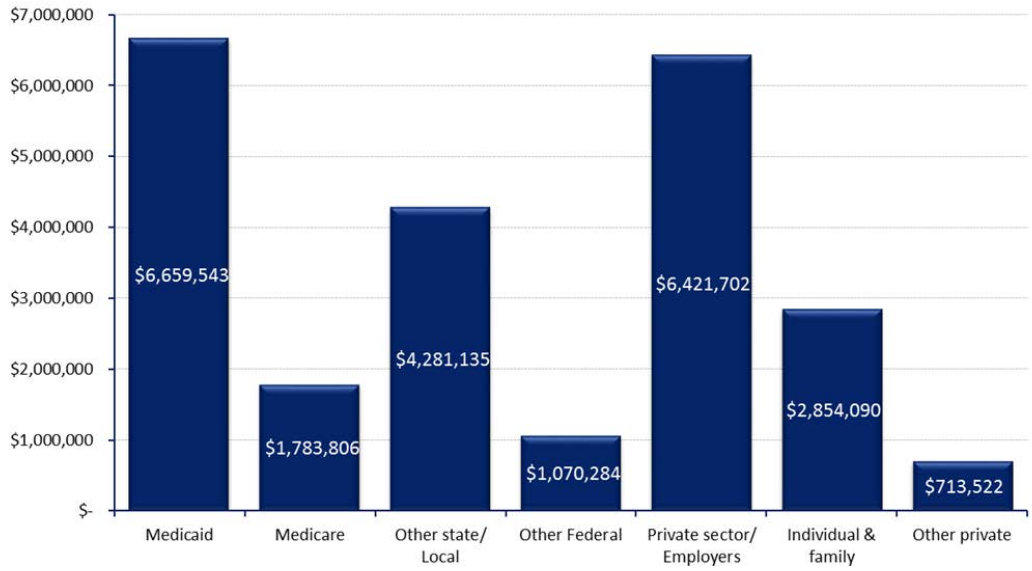


Central

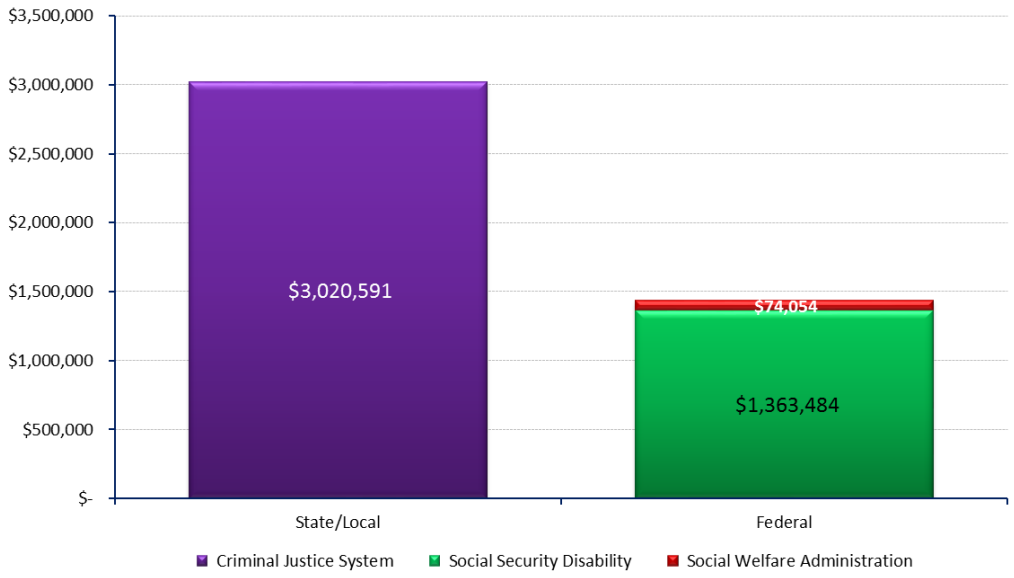
Indirect Costs

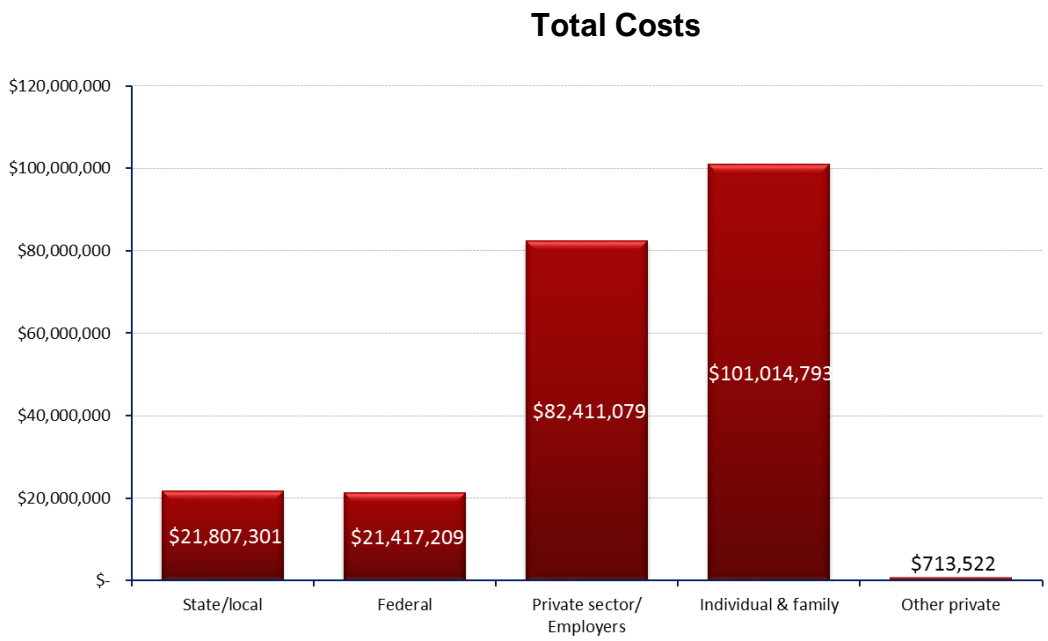


Direct Medical Costs

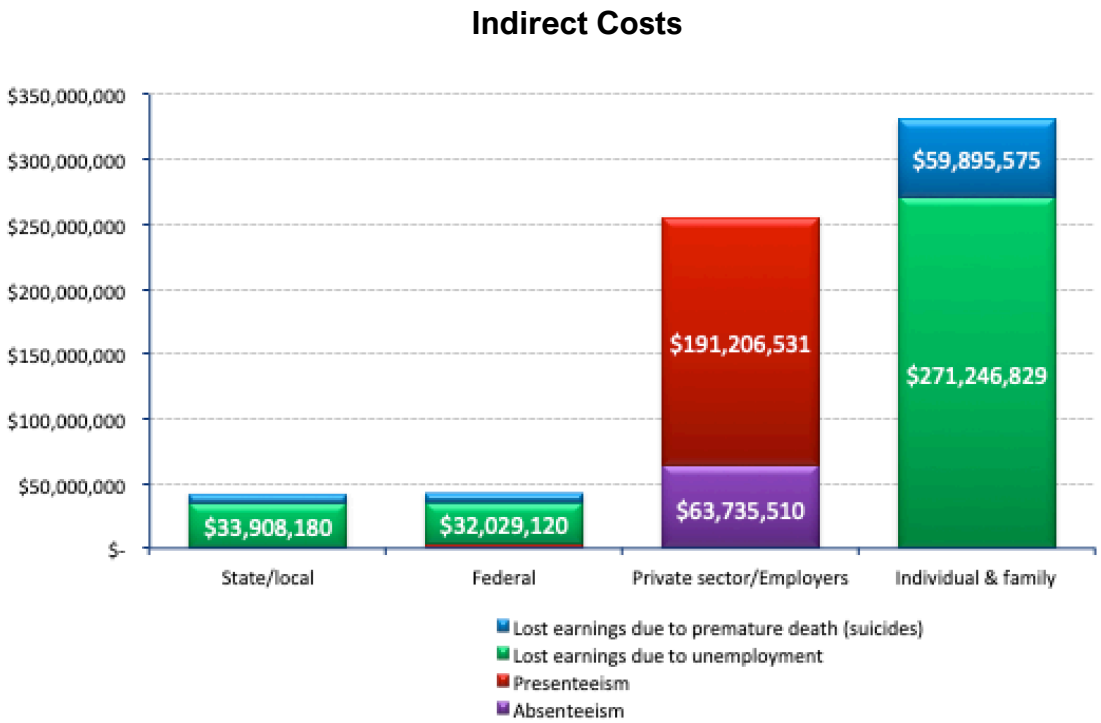


Other Costs

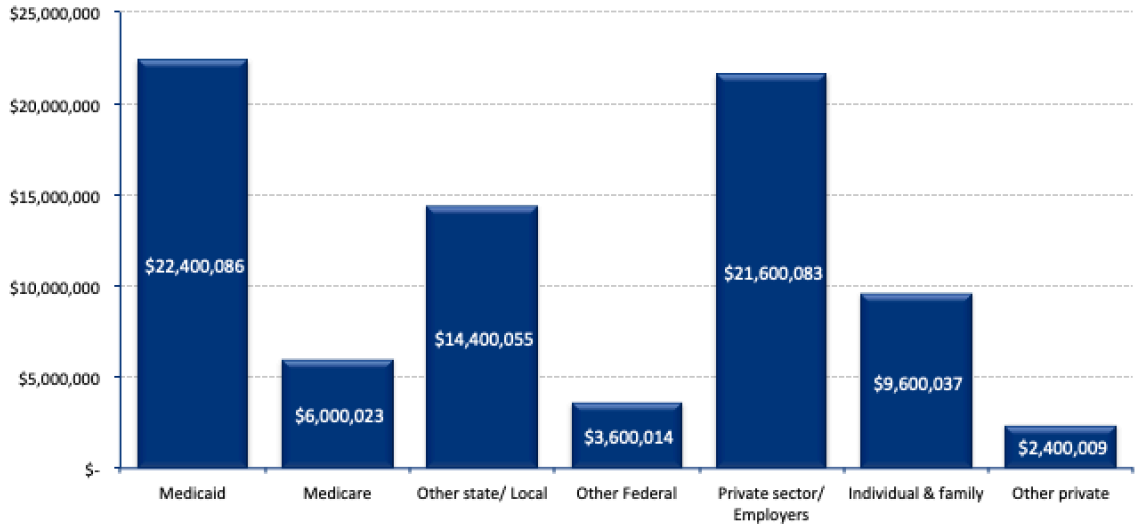




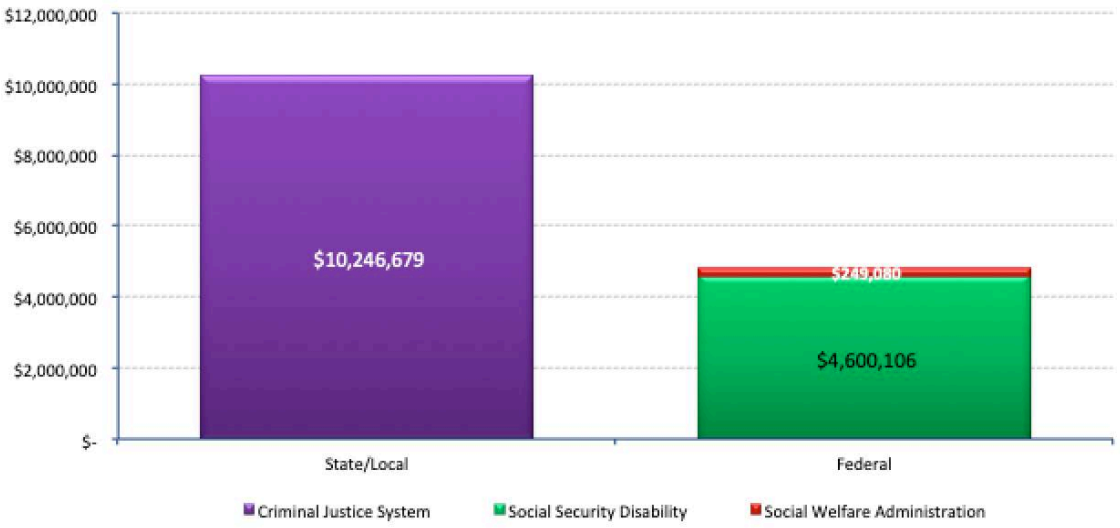
Compass Overall

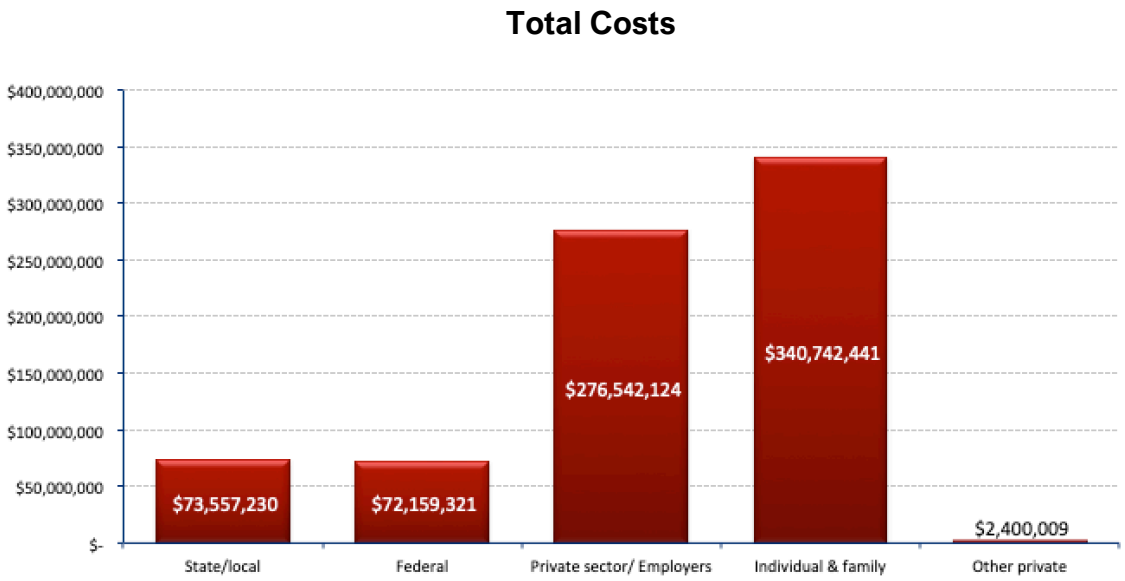


Direct Medical Costs



Other Costs





In summary, individuals and families in the Compass service area bear the greatest burden for indirect costs of mental illness, mostly through the $271 million lost from unemployment. Employers, by contrast pay indirect costs of $191 million for presenteeism, the lost productivity resulting from workers who participate only partially in their employment. Direct medical costs are shouldered first by Medicaid, and then by private sector employers, collectively around $44 million. State and local entities accumulate an additional $10 million through criminal justice referrals and the federal government spends $4.6 million on Social Security disability payments. Considering the over $765.2 million in estimated total costs, it follows that by providing effective outreach, engagement and treatment that reduces untreated mental illness by even 20%, Compass Health could help return approximately $150 million to the Missouri economy.

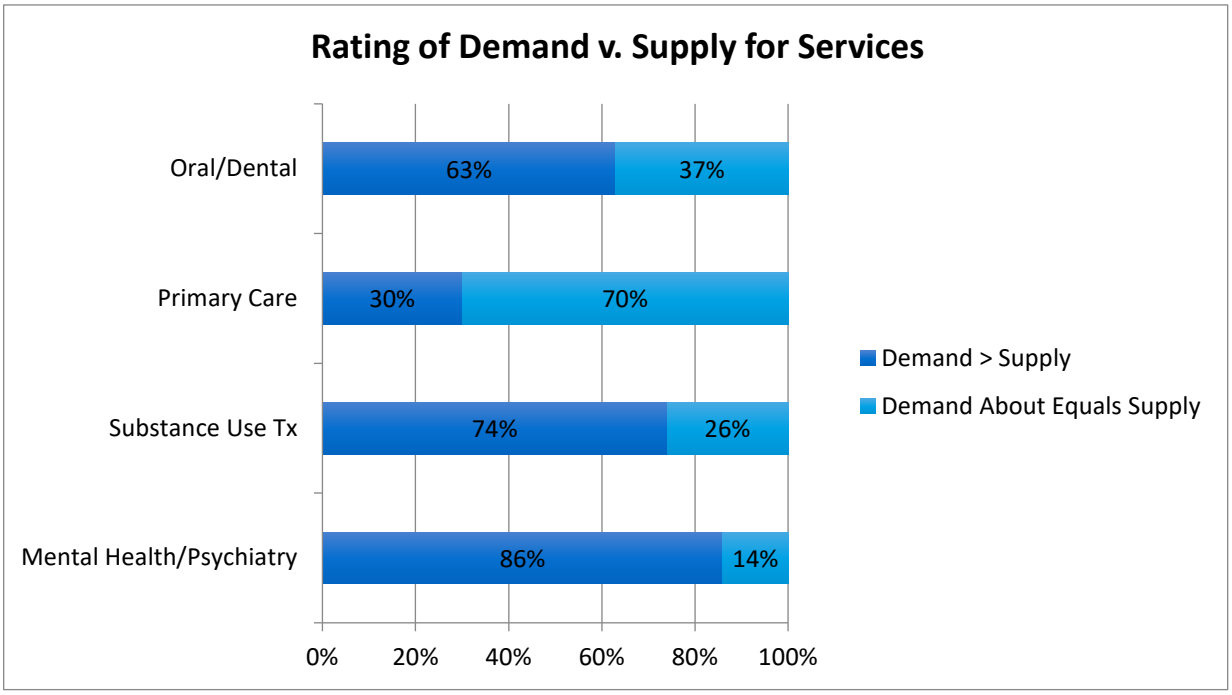
Compass Health Staff Survey of Unmet Need

Introduction

Compass Health staff members, primarily Executives, Senior Managers, and Directors, were asked to complete a survey to identify unmet service needs across the organization and to recommend actions to meet current and emerging needs. The 52 respondents were comprised of 25 Directors, 12 Senior Managers/Executives, 11 Supervisors, and 4 who selected "Other" (20 from Southwest, 17 from Eastern, 7 from Central, 5 from Southeast, 2 from Northwest, and one from Royal Oaks).

Rating of Demand v. Supply for Services

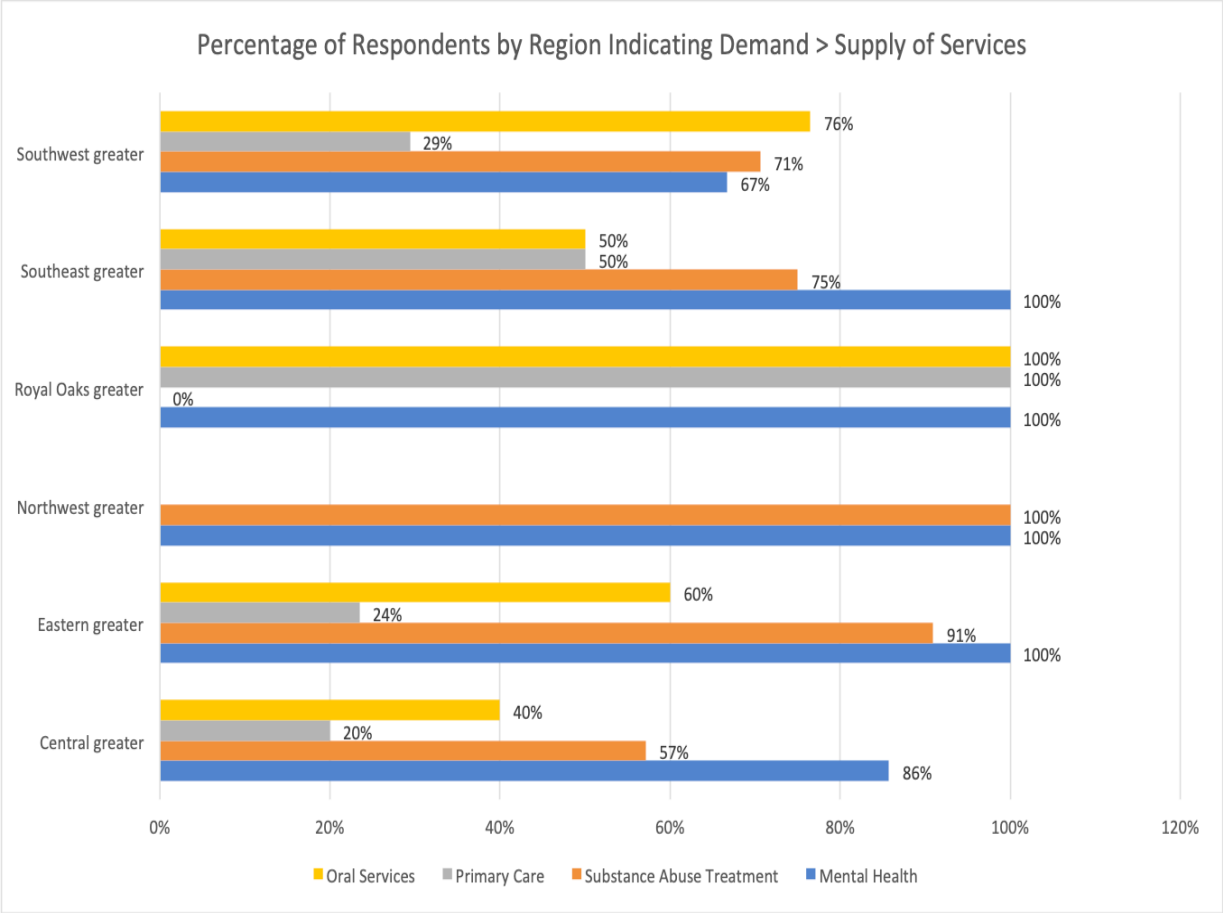
The respondents were first asked to assess demand v. supply (greater than, about equal to, or less than) in their areas for mental health/psychiatric, substance abuse treatment, primary care, and oral health services, with the following results:



As shown, the service line showing the greatest need according to staff is mental health/psychiatry by a substantial margin, followed by substance use treatment, oral dental care, and primary care. When a respondent indicated the demand was greater than the supply, they were asked why that was the case. Their responses are summarized here:

- In each programmatic area, participants indicated the greatest barrier to meeting the demand was a *shortage of resources, including shortages of providers, therapists, clinical staff, and facilities.* Exemplifying this theme were comments such as, “IHS caseloads are growing at faster rate, staff are struggling with ensuring all individuals are being seen at the rate they need due to volume of new clients coming in,” and “[There are] not enough clinicians to see the clients timely [and] Psychiatry appointments are booked out for months.”
- A second barrier was the *inability to provide the level of care required by consumers who are uninsured or underinsured.* Several participants offered insights such as, “[We are] turning away patients who are uninsured or don't have Medicaid (some who are actively having dangerous thoughts/hallucinations, etc).”
- A third obstacle was a lack of services offered because the *service(s) was/were not available or was/were not within a distance accessible to potential consumers, especially in rural areas.* One participant suggested, “[It] appears that both state and national data indicate a dearth of psychiatrists - especially in more rural, isolated areas,” while another stated, “It is [in] rural area[s] where primary services are limited.”

Regional results. Survey responses were analyzed to determine if assessment of need varies substantially by region. The chart below provides a snapshot of participants’ evaluation of whether demand was greater than or equal to the supply in each region for each service.



Several findings by region seem notable:

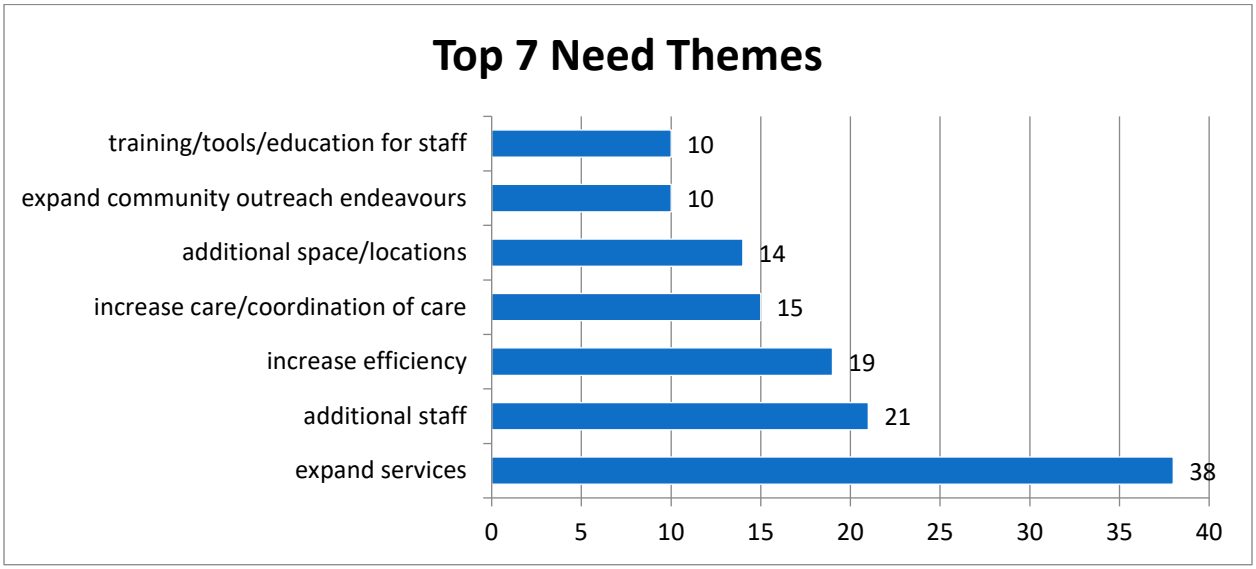
- Mental health/psychiatry demand is most clearly evident in all regions except Southwest.
- Substance use treatment demand is particularly evident in Eastern and Northwest regions.
- Oral/dental demand is viewed as greatest at Royal Oaks, as is primary care demand.

Top 7 Needs for Compass Health

Respondents were next asked to suggest the top three things that should be done in the next year to better meet existing or emerging needs, and the overall thematic analysis is presented below. From those data, seven clear themes emerged, defined as suggestions that were identified by 10 or more respondents (see these by frequency in the figure below). Not surprisingly, the seven themes aligned well with reasons offered as to why the demand was greater than the supply (above). The top seven themes with examples of suggestions and/or observations are:

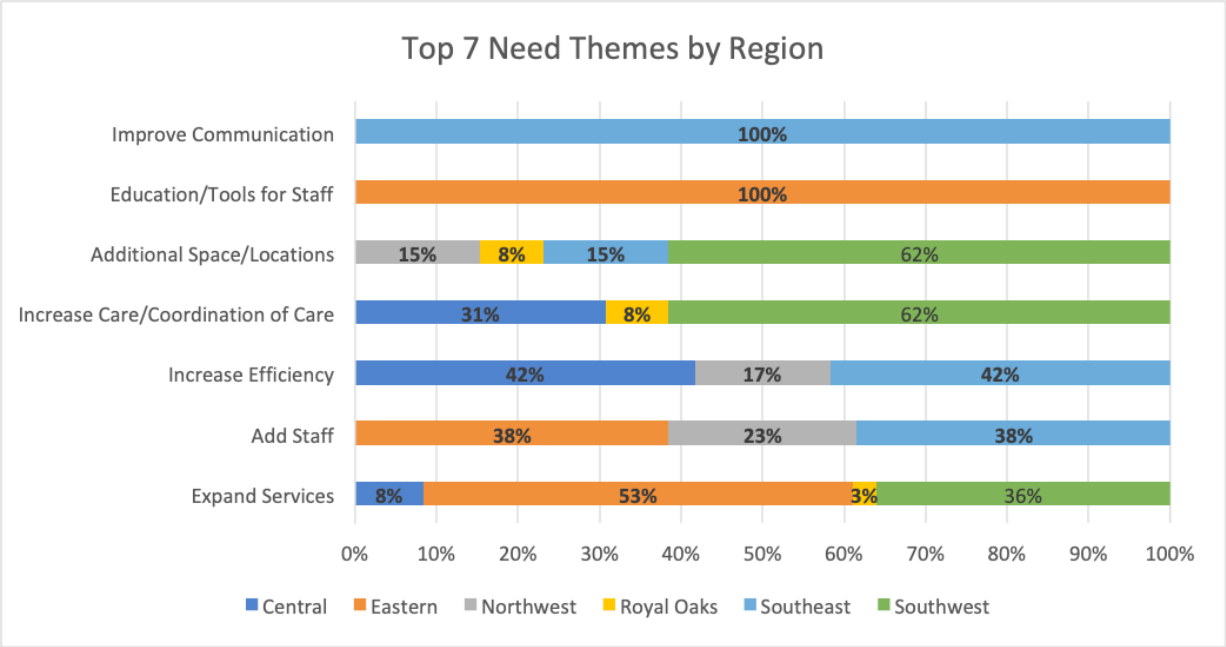
1. *A need to need to expand services*, which was illustrated by comments such as “Further expand availability of psychiatry services,” and “Expand prevention services.”

2. *Additional staff to meet consumer need* was identified by remarks such as, “More therapists,” “Hire more clinical staff,” “increase psychiatrists,” and “Increase MAT physicians.”
3. A need to *identify and implement methods to increase efficiency* were suggested by participant remarks such as, “Better manage schedules to reduce provider cancellations,” and “Restructure psychiatry in order to meet needs.”
4. Considering *alternative approaches to increase care and/or the coordination of care* was indicated by comments such as, “Identify how to backfill cancellations” and “Increase coordination of care for all of client care, we are more powerful that we currently operate (medical, dental, psych).”
5. The growing *need for additional space and/or locations* was suggested by observations such as, “Expand size of buildings to house new staff,” and “Provide sufficient space to meet provider/client needs.”
6. *Increase community outreach endeavors* was advised through various comments such as, “Partner with law enforcement to divert incarceration with treatment,” and “Increase outreach to School Based Services.”
7. *The need to provide additional training/tools/education to staff* was a theme identified by suggestions such as, “Continued emphasis on training clinical staff in cutting edge therapies to ensure customers have access to the best clinical practices - which should correlate to the best possible outcomes,” and “Provide continuing education opportunities to staff.”



The top seven themes were also analyzed by region. As the figure below suggests, some of the top themes, such as *improve communication* and *education/tools for staff* were salient for a particular region; specifically, the Southeast and Eastern, respectively, while other themes were identified in multiple regions. The other most notable regional differences were *additional*

space/locations and *increased care/coordination of care* were salient for Southwest, and *increased efficiency* was equally salient for Central and Southeast.



Needs Assessment Focus Groups of Customers

Three focus groups of customers with serious and persistent mental illness were conducted in January and February 2019 as part of the needs assessment process. All groups, convened in Raymore, St. Charles, and Washington, MO, were conducted using the same protocol, lasted between 50 and 90 minutes, and were facilitated by Paul Thomlinson, Ph.D., who also completed the qualitative data analysis around three overarching themes:

(1) Quality of Life: reflections on one's current situation, health, environment, community; fulfillment of expectations; met needs or desires; what people want for their lives and the extent to which they feel they have achieved fulfillment of those wants; (2) Community Concerns: things people would like to improve in their communities or that they feel are less than ideal; unmet community needs; gaps in services; disconnections between individuals and power structures; perceptions of threats to others' wellbeing; and (3) Healthcare Needs and Suggestions for Improvement: gaps in healthcare services; examples of unmet healthcare desires; possible solutions or alternatives presented by participants as ways to improve individual or community health or healthcare services. Results in each of these domains are presented below.

Raymore Customer Needs Assessment Results

Quality of Life: Factors most consistently highlighted as important to participants' *quality of life*, included:

- Feeling understood, and having a community with less stigma.
- Having family members that understand their condition.
- A supportive and helpful community and family.
- Having access to appropriate diagnostic and treatment services that are sensitive to the unique needs of those with mental illness.
- Having Compass staff that are informed and helpful.

In the words of the participants:

- "The way staff help us, they take time with us, they have patience…"
- "Compass staff are understanding and have an accepting attitude, and they treat us with equality."

Community Concerns: Factors most consistently highlighted as important *community concerns* included:

- Need more team work in the community, so that more community members/partners have an accepting attitude toward those with mental illness.
- More support systems in the community, including support groups for adults.

- Would like to see more community partners donating to the clubhouse and the cause of helping those with mental illness.
- Need more education of the community on mental health and mental illness.

In the words of the participants:

- "I'd like to see our community focus on our fundamental humanity, and not see us as a stereotype of mental illness…"
- "We would love more involvement with the praise group and pastors at churches. We need more faith-based connections to help support us."
- "Get the word out that our diagnosis doesn't define us!"

Healthcare Needs & Suggestions for Improvement: Factors most consistently surfacing as important *healthcare needs* and *suggestions for improvement* included:

- Bigger/more facilities for primary care and dental care (though 80% of participants do indicate they have a regular doctor and can get in to see them within 2-3 days).
- Transportation is most consistent barrier to care, especially in rural areas.
- More help in monitoring health so that when episodes of poor health emerge, they can get the help they need.
- Making sure health care is available even if they don't know where to find it…a "no wrong doors" approach.
- More education on their conditions—more than "generic" information on bipolar disorder, for example.
- More preventative dental care, beyond just extractions when their teeth are impacted by their illness, medications, etc.

In the words of participants:

- "The meds I'm on cause tooth decay! See? (*opens mouth to show the group*) I need help with that!"
- "The clubhouse helps a lot, but I need help getting to the doctor a lot of times."
- "I'd like to see more support groups, especially on coping skills and how to cope with the voices…"
- "We need to know when we are diagnosed with bipolar what to expect! What is most likely going to happen to us?"
- "We need to know where to go so we can study up on our illness."
- "We are not necessarily aware of what's out there and what's available to us when we need it."

St. Charles Customer Needs Assessment Results

Quality of Life: Factors most consistently highlighted as important to participants' *quality of life*, included:

- Feeling free to be who you are and express yourself without judgment.
- Having the opportunity to accomplish things personally, and meet personal goals.

- Being able to find what is meaningful to you and pursue that.
- Experiencing satisfaction with who you are and moving to greater independence.
- Being able to both give AND receive support.

In the words of the participants:

- "I don't like to have to hide who I am."
- "I like this place because my goals and the group goals are in the same direction."
- "We hear all the time…work that brain!"

Community Concerns: Factors most consistently highlighted as important *community concerns* included:

- Need more socialization opportunities beyond the clubhouse. Keep the non-clinical clubhouse model and educate the community more on its principles.
- Members need to be able to advocate for themselves better in the community.
- Need enough community-based staff to be in client homes, community locations.

In the words of the participants:

- "We need to know some step by steps on how to advocate for ourselves in the community."
- "I'd like to see groups like this one (i.e., the focus group) with the IHSs before they go into the field, into the community."
- "We need presentations and education to businesses and schools and neighborhoods on what is going on here…what mental illness is like."

Healthcare Needs & Suggestions for Improvement: Factors most consistently surfacing as important *healthcare needs* and *suggestions for improvement* included:

- Transportation is seen as the tallest barrier, as all participants had a PCP, and generally report it is easy to get in to see them quickly (1-3 days).
- Most participants had dentists with reasonable access (self-described) if they want/need to go, but it was noted to be "too much trouble." Last dental visit ranged from 2 months to 8 or more years.
- Need a better understanding of individual client needs, a way to assess them regularly (much like this focus group, it was noted).
- More support of Integrated Health Specialists (IHS) so they can spend more time with us.
- Need IHSs to know us as people, as individuals, before they can really start working with us.
- Need help getting Medicaid benefits and other coverage.
- Strong support and recommendation for adding more clubhouses in the area.

In the words of participants:

- "Getting an appointment with my doctor is not the problem…it's getting to the appointment that's the barrier."
- "Y'all need to recognize and acknowledge IHS workers and support them. They don't need to be held at fault for the barriers we are talking about."

- "Some IHSs have made me feel like a number, like they're not really here for me. We need IHSs to open up more and interact with us, like in this focus group!"
- "Well, I have insurance, but a lot fall through the cracks."
- "You should do more to help the uninsured people here."

Washington Customer Needs Assessment Results

Quality of Life: Factors most consistently highlighted as important to participants' *quality of life*, included:

- A good community is where you feel respected, with fewer stigmas, and a sense of meaning and purpose.
- Need more culturally appropriate and sensitive services for transgender individuals.
- Having the hierarchy of needs met.

In the words of the participants:

- "I wish the community was more inclusive of us, and that we had more friends."
- "I like to have a chance to do service before self. That's what gives me purpose. I need more of that."

Community Concerns: Factors most consistently highlighted as important *community concerns* included:

- Perception is that there needs to be less drugs and drug abuse in the community for improved quality of life.
- Concerns about crime and being safe from crime, as some had been victimized.
- Need more affordable housing options for those with mental illness.

In the words of the participants:

- "The community needs to be more accepting of us."
- "We need more activities and things to do that we like in the community."
- "I wish the community celebrated our recovery successes."

Healthcare Needs & Suggestions for Improvement: Factors most consistently surfacing as important *healthcare needs* and *suggestions for improvement* included:

- Need much increased access to affordable counseling services to prevent acting out.
- Much more substance abuse treatment access is needed in the area.
- Transportation to services is lacking and represents a barrier (though again, all participants have PCPs and can get appointments quickly when needed), and general transportation was seen as problematic.
- Respect for gender and name preferences is lacking.
- Need more name recognition and making our presence known in the community.
- More resources toward those with mental health challenges.
- More peer support specialists (were unaware of the actual number in this area).

- Need more push to end judgment of mental illness (concerns expressed about rumors of registration requirements for those with mental illness).
- Need accessible inpatient psychiatric unit (closest one is over an hour away).
- Support Compass workers so they don't burn out and leave.
- Need support groups for LGBTQ and generally more awareness and acceptance.
- Need more services for Veterans.
- Need Dialectical Behavior Therapy in Franklin County (used to have it but it went to Wentzville is how it is perceived).
- Need help with affording psychiatric medications and with taking them consistently (medication adherence: about half of participants reported they don't take their meds as prescribed and could use help with reminders, packaging, routines).

In the words of participants:

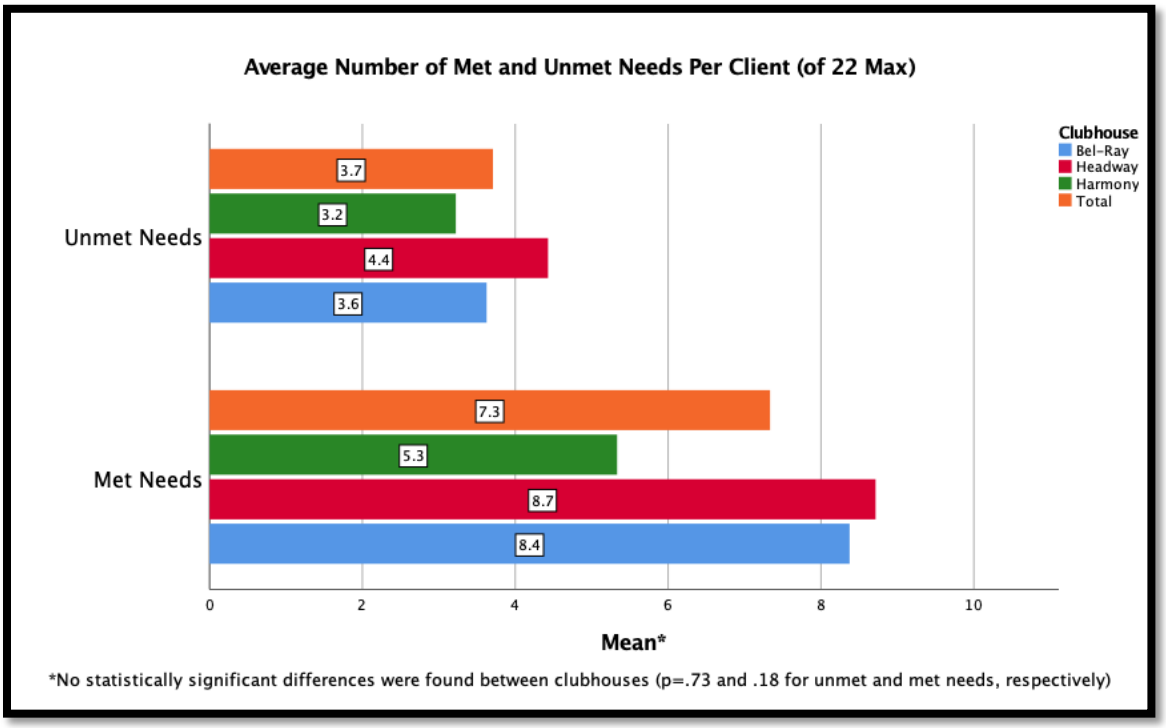
- "IHSs spending more of their time on paperwork makes me feel unheard."
- "My regular doctor doesn't seem very understanding and accepting of mental illness."
- "Psych meds are so expensive, I don't take them a lot of times."
- "I'm worried about the drug abuse and I wish you all would drug test people before they come in here. I know a lot of people who are drinking and drugging and self-medicating, and they need help with that."
- "I have a psychiatrist, but I need them to listen and not treat me like a chart."
- "I really want and need a counselor, but I can't afford the co-pay…and 15 minutes with my psychiatrist doesn't count…it isn't enough."

Structured Needs Assessment of Customers with Serious Mental Illness

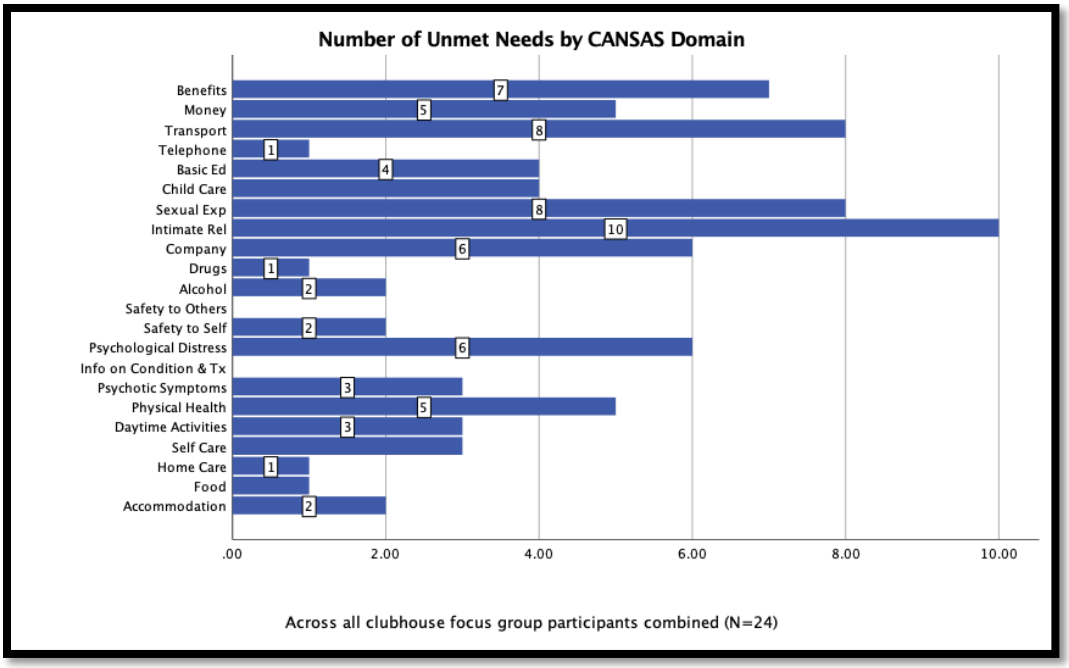
At the conclusion of each customer focus group, the clients/participants were asked to voluntarily complete the *Camberwell Assessment of Need Short Appraisal Schedule* (CANSAS) self-rated version, which was developed as a tool to evaluate need among persons with serious mental illness. The tool asks respondents to think about their needs in 22 domains (shown in the chart below), and to determine in that particular area if they have *"no need"* (not a serious problem for them), *"met need"* (not a serious problem for them because of help they are given), or *"unmet need"* (a serious problem for them despite any help they are given).

Camberwell Assessment of Need Short Appraisal Schedule Findings

The average number of unmet needs among the customers was 3.7, and the average number of met needs was 7.3. The three different customer samples were statistically compared on number of needs and found not to differ significantly from each other (see figure below). Interestingly, the number of unmet needs lines up very closely with many studies of the SMI population. For example, Salvi, Leese, and Slade (2005) found a mean of four (4) unmet needs in their study of individuals with SMI, and the literature generally reports between 2 and 4 unmet needs in this population.



Since the three groups of Compass Health clients did not differ from each other, it is appropriate to combine them for further analysis of need. The figure below provides an overview of the 22 needs assessed among the clients, providing a sense of direction regarding where to focus development, improvement, and expansion efforts in order to meet client needs.



As can easily be seen, the most salient areas of unmet need identified by clients are (in descending order of frequency):

- **Intimate relationships** (do you have a partner) and the cognate area of **sexual expression** (how is your sex life)
- **Transportation** (how do you find using the bus, etc.)
- **Benefits** (are you getting all the benefits you are entitled to)
- **Company** (are you happy with your social life)
- **Psychological distress** (feeling sad or low recently)
- **Money** (how are you at budgeting your money)
- **Physical health** (how well do you feel physically)

Source:

Salvi, G., Leese, M., and Slade, M. (2005). Routine use of mental health outcomes assessments: Choosing the measure. *British Journal of Psychiatry, 186: 146-152.*

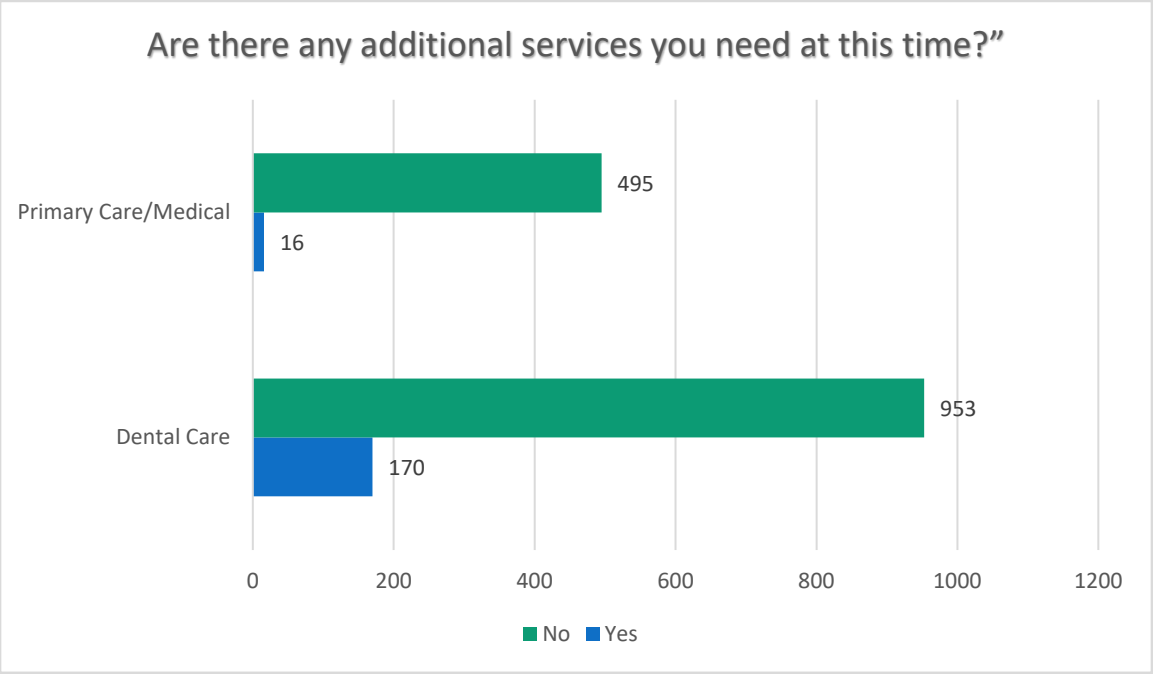
Key Findings from Compass Health Customer Satisfaction Survey

Introduction

Certain existing customer satisfaction surveys have relevance to needs assessment, as they have accumulated a substantial number of recent responses (in the thousands), representing a large-scale way for customers' voices to be heard in this process.

Primary and Dental Care Surveys

The survey assessing customer experiences with Compass primary care and dental clinics concludes with the question: "Are there any additional services you need at this time?" There are currently over 1,600 responses (from the past 18 months) to this question, as follows:



A chi-square test reveals that there is a statistically significant ($p < .05$) difference in the likelihood of customers indicating unmet need at the time of their surveys, with unmet dental needs remaining in substantially higher numbers than unmet primary care/medical needs.

The ability to break these findings down geographically would be very helpful in planning and development efforts in the future. Also, given the number of surveys ongoing, a review and adjustment of their content with an eye toward maximizing their relevance to needs assessment is recommended.

Community Stakeholder Focus Group and Survey Findings

Introduction

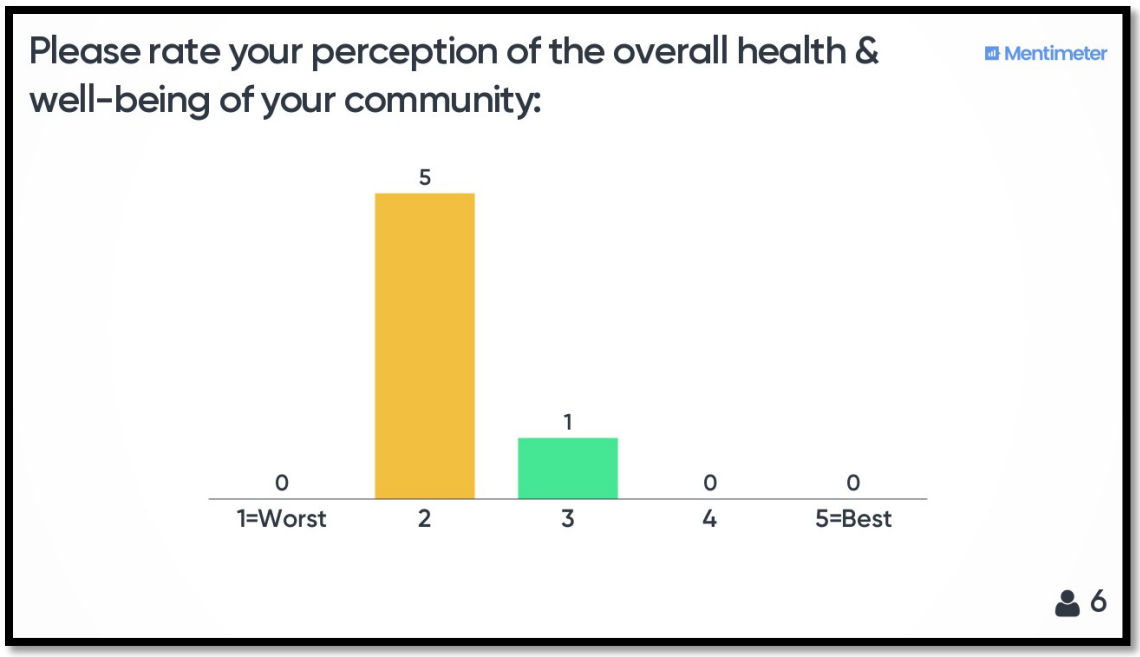
In January and February of 2019, community stakeholder groups (typically called *Boards of Associates* or a similar title) were consulted with regard to the health of their communities, with a focus on the things Compass Health might be able to do to better meet community needs. These groups are comprised of key associates and stakeholders of Compass Health, and include individuals from the realms of business, healthcare, social services, education, and advocacy. Four data gathering opportunities were used to gather input from all Compass regions in Missouri: (1) a focus group held at the combined Southwest and Northwest Board of Associates meeting in Clinton, MO, (2) a focus group held in Jefferson City, MO, to gather input from the Central region Board, (3) an online survey of the Eastern region stakeholder group, and (4) an online survey of the Southeast region Board of Associates. The surveys contained the same questions and rating scales as the in-person focus groups.

Southwest/Northwest Combined (Clinton, January 8, 2019)

Regarding health, what is your impression of your community?

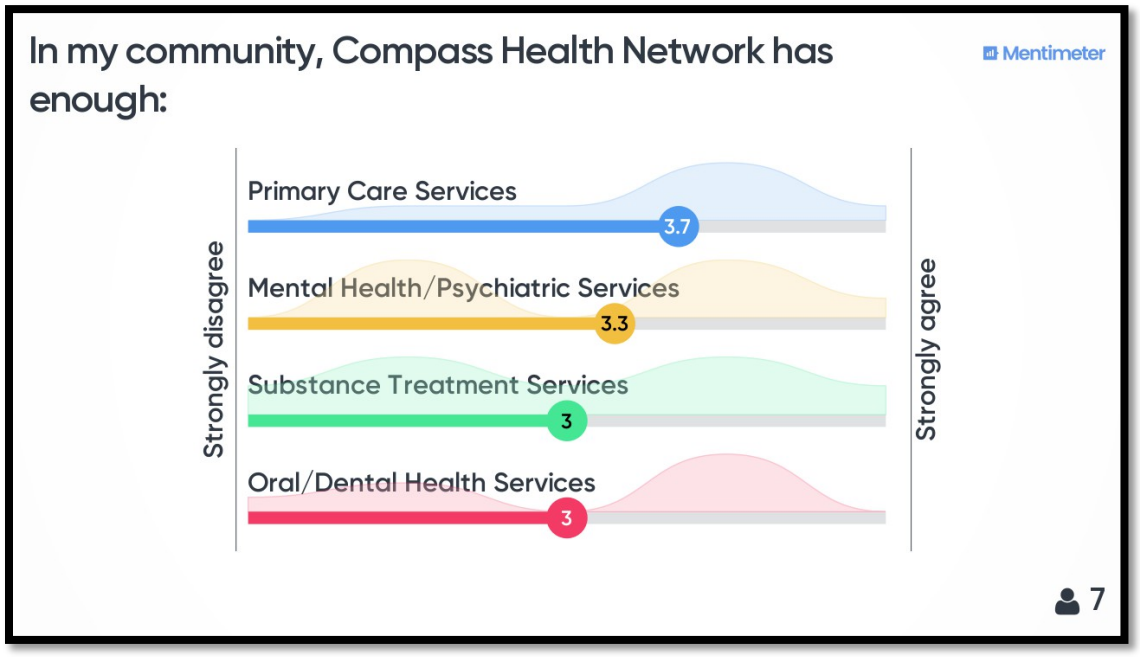
The group painted a picture of a community that, despite substantial effort: (1) is relatively unwell, (2) is in need of a concerted focus on health promotion and wellness, and (3) has significant gaps in services (including disparities based on social determinants of health). Comments and ratings supporting this conclusion are provided below:

- Great people but lots of gaps
- People don’t always trust local providers.
- Some gaps between socioeconomic levels
- Social determinants of health continue to be a challenge.
- We are not very healthy.
- Split: health conscious group and group that doesn’t focus on health.
- Not community wide vision of activity levels and food quality.
- Not overly walkable.
- Health Department is trying to engage community on obesity management, but doesn't seem to be doing well in this regard.



Adequacy of Services Offered

The group was asked to rate the sufficiency of four categories of Compass services in the community (it was noted that Compass does not provide all services in every service area), with the following results (on a 1 to 5 scale):



Substance use treatment, dental services, and mental health services were viewed as relatively lacking when compared to primary care.

What do you think are the top health-related issues or challenges in the community?

The group identified a number of challenges including: (1) lack of awareness of available resources, (2) transportation, (3) affordability of services, and (4) a number of specific conditions such as addiction, heath disease and COPD. Below are their specific comments:

- Mental health and connected health
- And life complications, obesity, affordability and access to resources
- Lack of finances blocks people from getting help...people assume they can't afford it.
- Obesity
- Opioid Use
- Heart disease
- Cancer, heart disease, COPD, lack of inpatient psychiatric beds
- Transportation
- Perception of coverage available
- Awareness of what is available
- Lack of exercise and diet
- Single parent limitations
- Compliance
- Access to transportation, post discharge support.
- Availability of specialty services

What barriers do you see to improving the community's health?

The group-identified barriers to health improvement were similar to the challenges mentioned above, but also included patient factors such as resistance, prioritization of seeking care, and willingness to adhere to treatment.

- Education (lack thereof) both health/ medical awareness and general, which contributes to SES
- No confidence they can succeed with a healthy change
- Some resistance to change, lack of time
- Medicaid expansion
- Prioritizing getting care.
- Seeking and following up with Dr.
- Willingness to stick to a plan.
- Lack of transportation
- Lack of select specialties
- Lack of post discharge support

What advice do you have for Compass Health as we plan for the next 3 years?

When asked specifically how they would advise Compass to proceed in the near future, the group provided a range of actions from focusing on branding and marketing, to more community engagement, to stigma reduction (a strong theme throughout). Individual comments were as follows:

- Become visible to community through a PR and marketing plan
- Identify opportunities to partner with other agencies
- Control growth
- Expand communication.
- Share what expectations should be for care and treatment.
- More parking.
- Stick with the name
- Engage in more community building, partnership, and advocacy
- Work on perception change--what do we want to be seen as?
- We seem to have “normalized misery”--raise awareness of how it could be and reduce stigma.
- People don’t understand the mind-body connection, even health care providers, so teach them!
- Overcome stigma and perceptions of poor quality in the past…”I don't want to go to Pathways/Compass” has been a common refrain…rather drive to KC than go to Compass in my own back yard.

Central Region (Jefferson City, January 18, 2019)

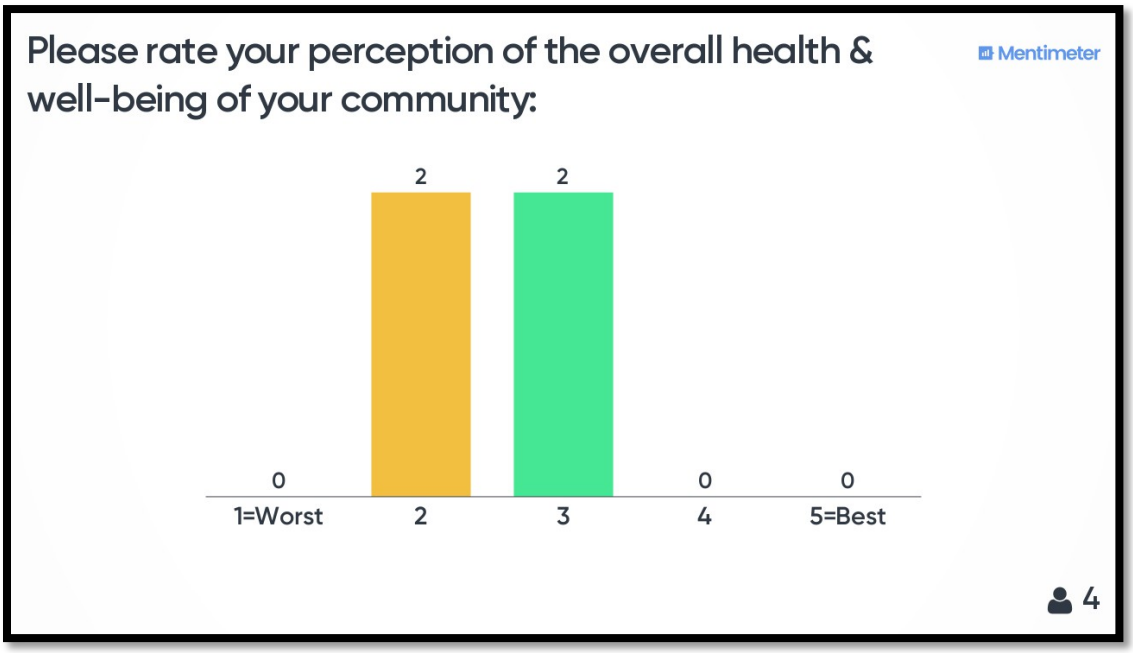
Regarding health, what is your impression of your community?

The group was somewhat split in its perception of the health of the community, with some emphasizing progress that has been made in integrating care across health and behavioral health, and others indicating there are serious access and availability problems in the community. The group raised stigma as a problem as well. Comments were as follows:

- Serious issues related to behavioral health & problems with access.
- Stigma on mental health
- In Jefferson City, MO, I feel like this community is doing well and making progress in the fields of physical health, mental health and integrated healthcare. I feel like HCH is a good asset to use to help providers know health information.
- Prevalence of anxiety, SUD, depression, stigma and associated crime.
- Stigma is real and we need more groups and access to care, including nights and weekends.

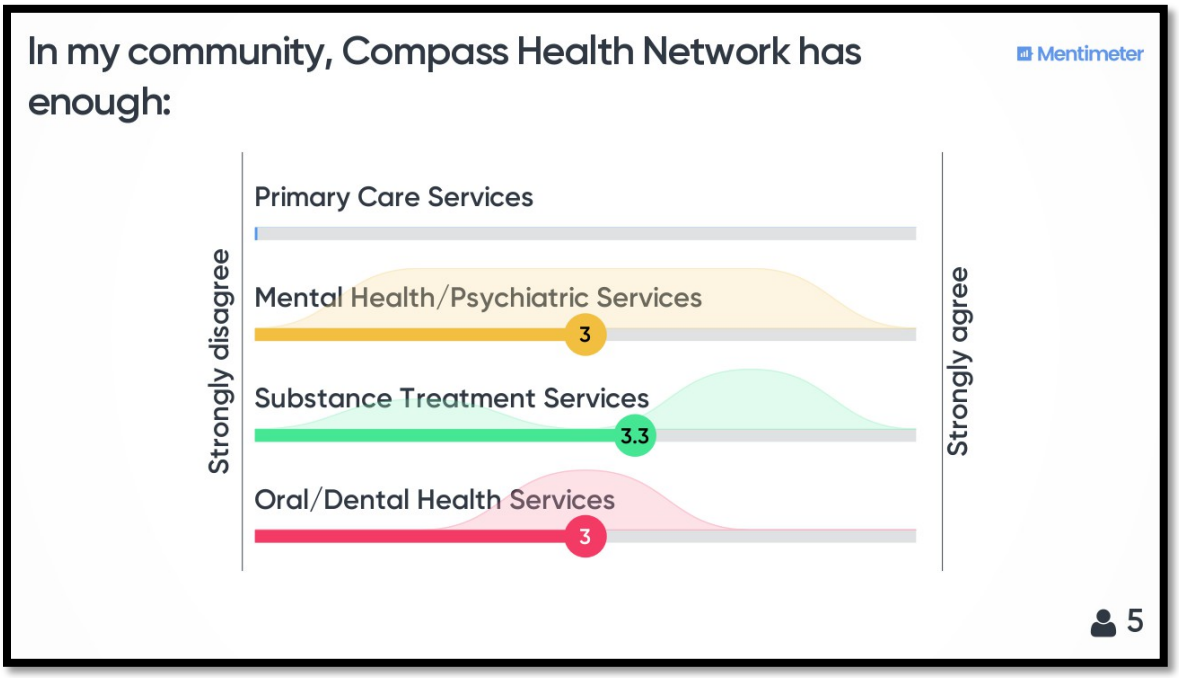
- Need to have services available, and offices open longer. Doesn't seem very patient centered.
- Don't believe we are doing well as others have mentioned…teen suicide is up, teen pregnancy, high stigma
- Answers lie in the community/parishes.
- Stigma has reduced somewhat, less than it was 20 years ago, at least among health care providers.
- Stigma actually seems worse among mental/behavioral health/SUD providers
- Need training for providers and community on all of these issues.
- Mental health problems are STILL the number one issue after all these years and we need more ACCESS to care.
- Depression is the acceptable mental illness.
- Parents seem to be in denial of illnesses
- Teachers are the same and have lots of stigma about mental illness

The split mentioned above also revealed itself in the community health rating scale, but even the best rating was only at the midpoint on the 5-point scale, indicating a relatively unwell characterization of the community:



Adequacy of Services Offered

The group was asked to rate the sufficiency of four categories of Compass services in the community (it was noted that Compass does not provide all services in every service area), with the following results (on a 1 to 5 scale):



All available service lines were rated as relatively lacking (around the midpoint on the 5-point scale overall).

What do you think are the top health-related issues or challenges in the community?

The top challenge identified was (universally) behavioral health, including mental health and SUD treatment, and the need for more education and stigma reduction, with specific comments as follows:

- Behavioral health (x2)
- SUD, anxiety, suicidal ideation and depression
- People getting lost, lose hope, poverty entrapment, substance abuse, often end up in criminal justice system
- Stigma is huge, lack of education about behavioral health, families don't know where to turn to seek help
- Schools should include behavioral health curriculum

What barriers do you see to improving the community's health?

The group was less clear on the barriers to health improvement, but there was a clear theme of needing to support parents and teachers in their respective roles vis-a-vis health and behavioral health, with comments like:

- Thinking the problems that we have in health care are everyone else's problems to fix, funding, individuals making decisions that know nothing about health care, teachers not being able to teach, parents expecting teacher to raise their children
- Parents, teachers, legislative
- Early intervention and support. Coordination with community, schools, places of worship not equipped. When crisis occurs-what next?

What advice do you have for Compass Health as we plan for the next 3 years?

When asked specifically how they would advise Compass to proceed in the near future, the group overwhelmingly recommended we do more on community education and awareness raising around issues of behavioral health (this was brought home in a unique way when it became clear that the NAMI director in attendance did not know that Compass provides the evidence-based DBT and CBT interventions). Individual comments were as follows:

- Focus more in our communities on the promotion of mental wellness
- Keep raising awareness of need, resources to respond, building awareness of both in communities. Assure this gets into awareness of public discourse of how this is a base for societal health.
- Partnering with other agencies to expand services
- Stick with the new name
- Continue to address barriers to accessing care; BH partners host community events to raise awareness
- NAMI director: asked if Compass does DBT and CBT and seemed amazed that the answer was yes. Asked if there was a COST.
- Need to equip teachers, teacher training, with skills and knowledge on MI; need curricula in schools; teach kids resiliency, MH, EQ,
- Let's come together and do a community summit on these issues: education, planning, awareness raising.

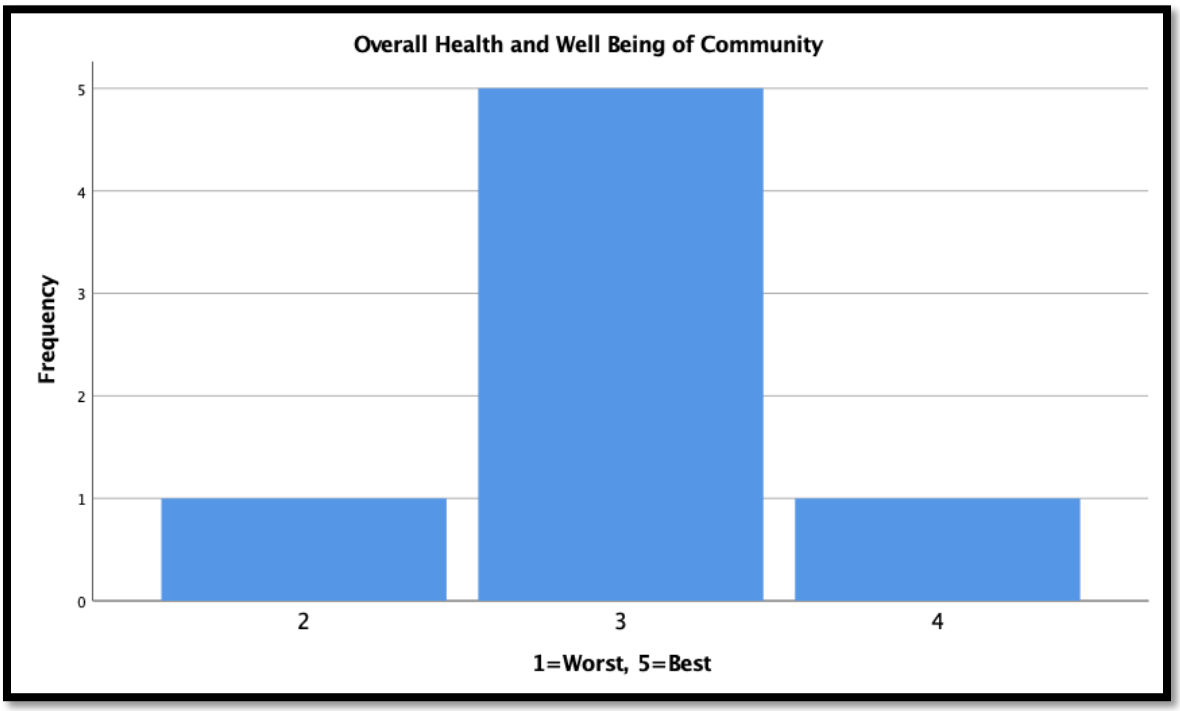
Eastern Region (Online Survey, February, 2019)

Regarding health, what is your impression of your community?

Respondents in this group of seven painted a bit of a conflicting picture of the community, from “relatively healthy” to “not good overall,” but was consistent in saying there seems to be good community engagement and improvement efforts ongoing. Comments supporting this assessment include:

- Relatively healthy
- Improving but access issues continue for the underserved

- Focus needs to move to prevention, wellness, balance through education and outreach efforts.
- Our community for the most part is aware of healthy choices and where health services can be accessed
- Not good overall.
- Very engaged in improving health relations



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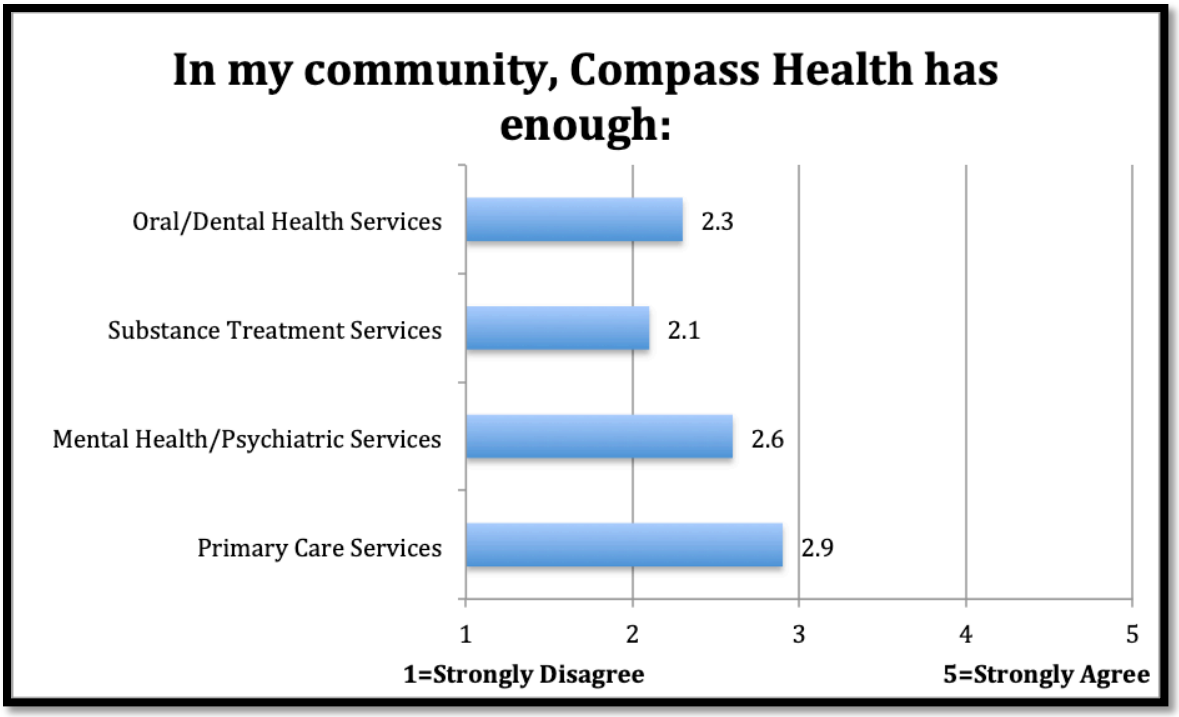


The Eastern stakeholder group rated the sufficiency of ALL services below the midpoint, with SUD treatment and dental care rated as particularly lacking.

What do you think are the top health-related issues or challenges in the community?

The most pressing health-related challenges showed clear themes with multiple respondents endorsing them: (1) SUD, (2) mental health care and access, including affordability of medications, (3) obesity and related health concerns, (4) transportation to improve health care access, (5) affordable housing, and its impact on mental health, and (6) access to dental care. Supporting comments were as follows:

- Substance abuse, addiction (x5), Illegal drug use, over prescription of opioids, smoking (x3), smoking related illnesses,
- Mental Health (x5)
- Obesity (x3), education about health care and nutrition, diabetes
- Reliable transportation to appointments, public transportation to appointments
- Affordable housing, lack of affordable housing is affecting mental health
- Dental/oral surgery, dental care access/cost for services outside Compass Heart disease
- Access to services
- Medicaid rules limit services to children who need help
- Physical therapy
- Paying for medications

What barriers do you see to improving the community's health?

The group of respondents elucidated fairly clear themes with regard to barriers, including: (1) funding reductions, lack of insurance and insufficient resources preventing needed access to care, (2) need for more access points, including school based services, (3) transportation, and (4) health promotion/education efforts needed.

- Funding (x2), cost of treatment, Insurance, lack of insurance, Medicaid rules, increased cost of care, reduction of funds, lack of insurance coverage, resources
- Need is greater than available services can take care of, access (x2), location, shortage of providers, lack of in school or on campus clinics
- Reliable transportation (x3)
- Education/outreach efforts, knowledge
- Changing eating habits—it is cheaper to eat unhealthy, lower activity with increased technology, especially in children
- Substance abuse is growing
- Language barriers
- Need for respite shelter for children who just need a safe place
- Rural area needs are harder to meet

What advice do you have for Compass Health as we plan for the next 3 years?

When asked specifically how they would advise Compass to proceed in the near future, the group had strong consensus in a couple of areas: (1) the need to invest in Compass staff, in recruiting and retaining staff, including a specific mention of IHSs, (2) focus on community partnerships that will help increase access; (3) expand needed services, especially dental; and (4) increase access through transportation and telehealth.

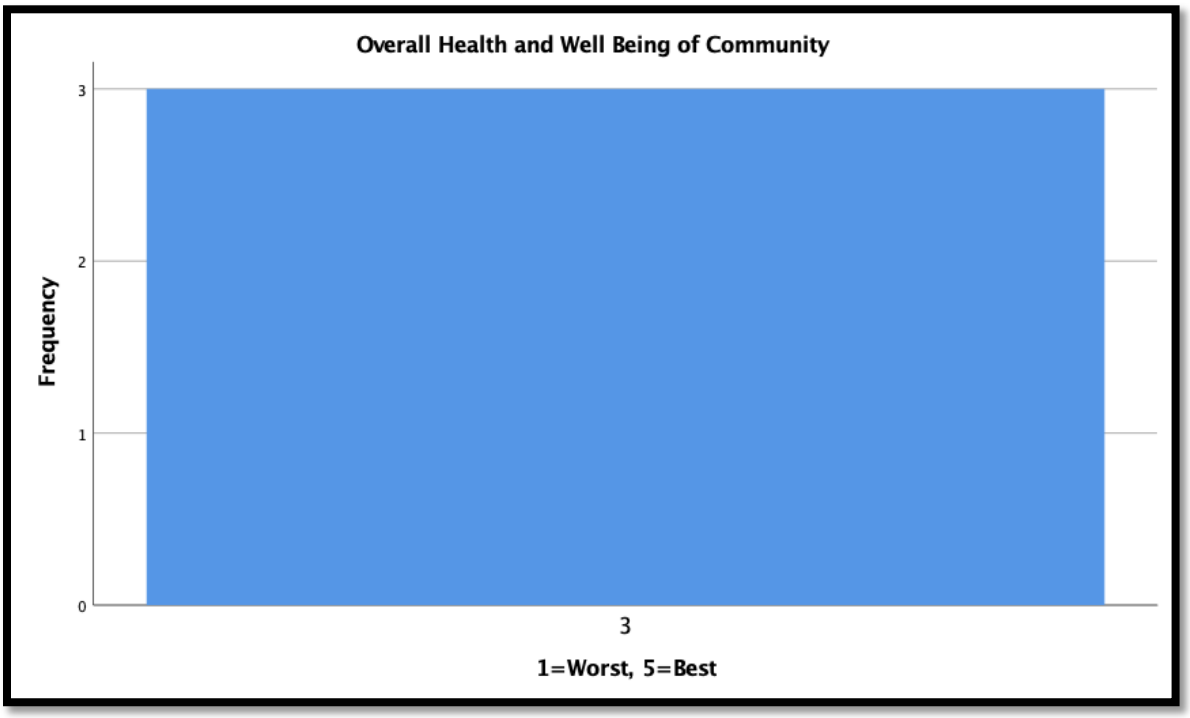
- Make significant investments in (database, dedicated in-house talent acquisition) provider recruitment and retention—the shortage is going to get worse; find ways to retain IHS workers; work on retention plan for employees
- Focused efforts to continue to grow partnerships with community partners/referral sources; form partnerships with existing health systems within the regions
- Expand dental; provide expanded dental care
- Wider use of telehealth services
- Start transportation services for clients
- Implementation of sliding scale fee physical therapy
- Increase footprint/access
- Continue to be responsive to communities
- Doing a great job - keep it up!

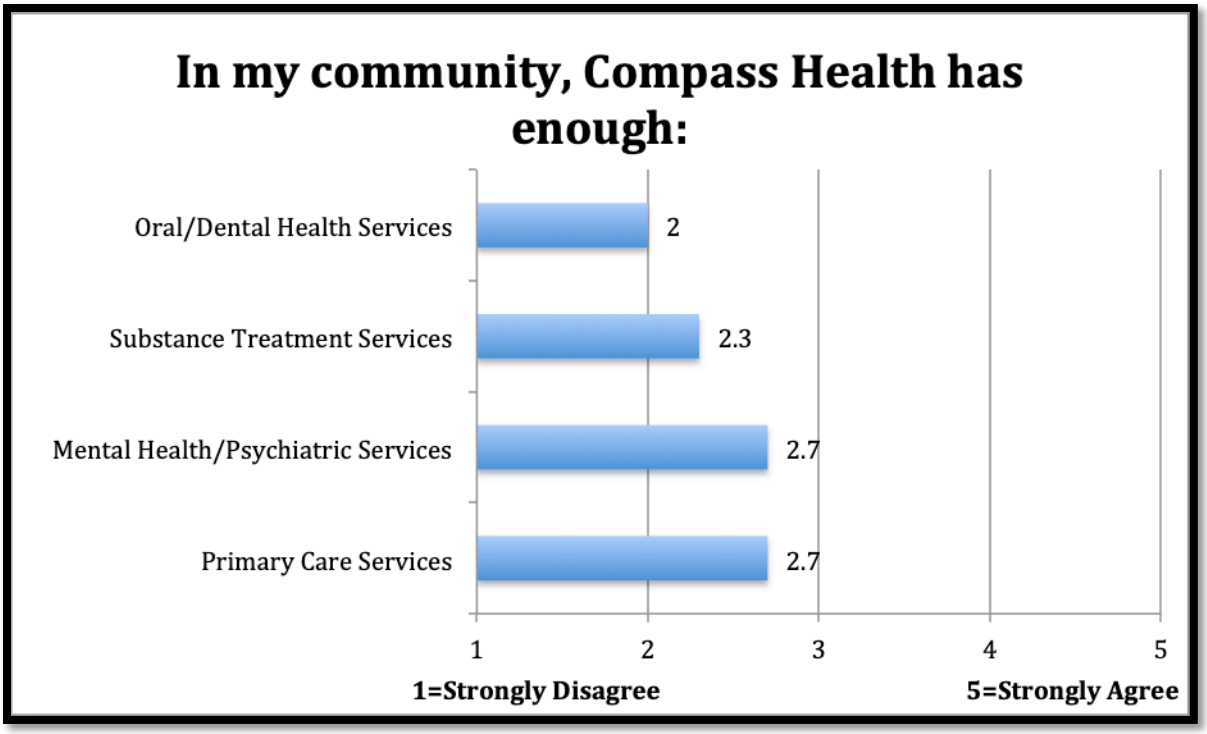
Southeast Region (Online Survey, February 2019)

Regarding health, what is your impression of your community?

Three respondents provided the following characterization of the community's health:

- Stressed
- Considering the size of our community, decent health resources.
- We have several resources but other barriers keeping people from accessing the resources.





Adequacy of Services Offered

Respondents rated sufficiency of service lines below the midpoint in all areas, with dental and SUD treatment rated as most lacking.

What do you think are the top health-related issues or challenges in the community?

With only three respondents, it is sometimes difficult to find a critical mass of opinion, but a theme does seem clear here: a stressed community in need of more SUD treatment, mental health services, health promotion, and health care (primary and urgent care). Supporting comments were:

- Substance abuse; substance abuse care in close proximity, unknown potential market for services
- Mental health; stress; additional mental health providers
- Obesity; lack of exercise
- Primary health care providers
- Urgent care
- Dependence of medicine

What barriers do you see to improving the community's health?

When asked about barriers to improving health, the respondents were critical of both the health care system (e.g., wasting money, pushing medications to make money), and individuals/patients (e.g., lacking motivation, not keeping appointments, not taking preventative measures). Comments were as follows:

- Waste of money within health care facilities; health care pushing prescriptions to make money; taking the easy route of prescription medication
- Indifference; consistency in keeping appointments; looking for the cure not taking preventative measures
- Heath care personnel
- Infrastructure
- Middle class without insurance resources
- Transportation
- Transient Population

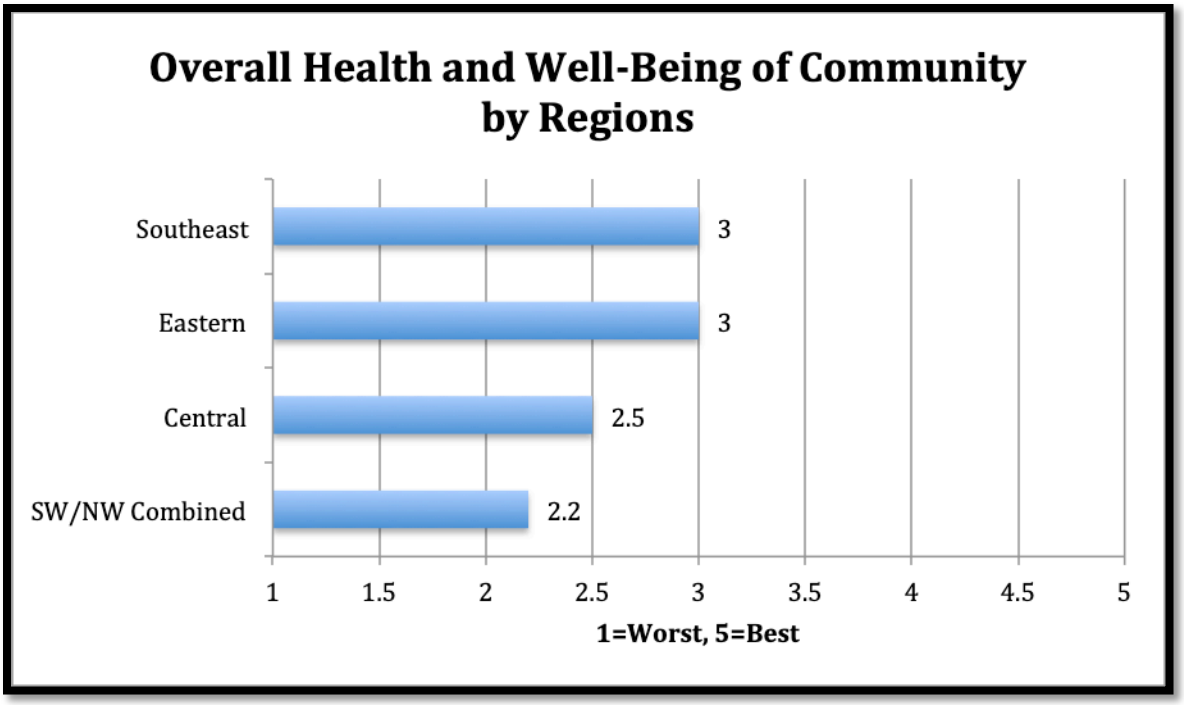
What advice do you have for Compass Health as we plan for the next 3 years?

When asked specifically how they would advise Compass to proceed in the near future, respondents indicated the following specific comments (grouped into themes):

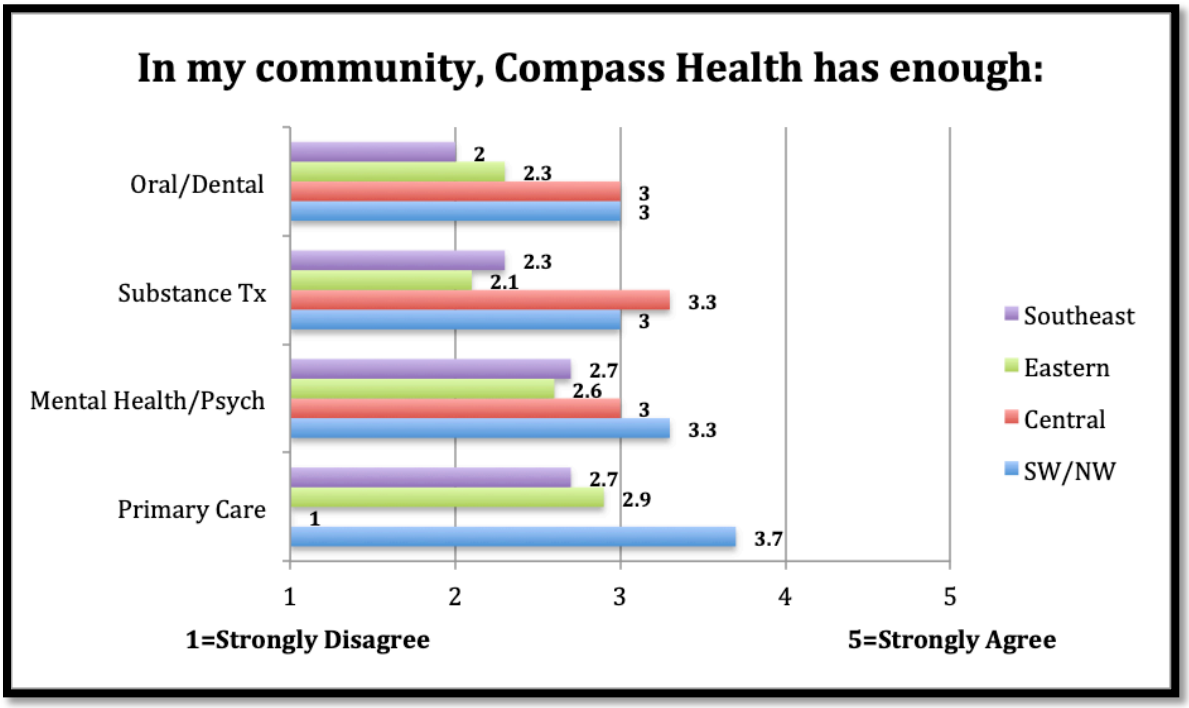
- Individuals need help/counseling to understand and develop a lifelong strategic plan of action; long term strategies, not quick fixes
- Partnerships with educational institutions; expansion of intern programs; high school career involvement; internal development programs

Comparative Ratings Across Compass Regions

As these regional average ratings (below) show, stakeholders rated Southeast and Eastern regions highest (but still only at the midpoint on the 5-point scale), with the combined Southwest and Northwest regions being rated worst.



Finally, as the following comparative assessments of service sufficiency show, primary care services in the SW/NW region were rated as most available/sufficient, and the clearest ratings of need were: (1) dental and SUD treatment services in the Southeast, and (2) SUD and dental treatment in the Eastern region.



Prioritized Population Health Needs Across Compass Health Regions Drawn From Community Health Needs Assessments

Introduction

The information in this section was culled from all of the most recent available community health needs assessments conducted (as required by the Affordable Care Act) by regional non-profit hospitals, whose service areas fully or partially overlap Compass Health counties. In addition to a compendium of the prioritized health needs in each region, any health disparities discovered in the community health needs assessment process are also provided below.

Eastern Region

(**Franklin, Lincoln, St. Charles**, Jefferson, St. Louis, and **Warren** Counties)

Community health needs assessments from the following hospitals, health systems, or collaboratives overlapping with the Eastern Region are included here:

- Hermann Area District Hospital (2014-2016)
- SSM Health St. Joseph Hospital (2018)

Prioritized Health Needs of the Population

- Substance Use
- Adult Obesity
- Access to Care

Southeast Region

(**Crawford, Dent, Gasconade, Iron, Laclede, Maries, Phelps, Pulaski, Reynolds, St. Francois, Washington,** Bollinger, Butler, Cape Girardeau, Carter, Douglas, Dunklin, Howell, Madison, Mississippi, New Madrid, Oregon, Ozark, Pemiscot, Perry, Ripley, Scott, Shannon, Ste. Genevieve, Stoddard, Texas, Wayne, and Wright Counties)

Community health needs assessments from the following hospitals, health systems, or collaboratives overlapping with the Southeast Region are included here:

- Missouri Baptist Sullivan Hospital (2016)
- Phelps County Regional Medical Center (2016)
- Hermann Area District Hospital (2014-2016)
- Washington County Rural Health Network (2015)

Prioritized Health Needs of the Population

- Adult Oral Health
- Substance Abuse
- Adult Obesity
- Mental Health
- Food and Nutrition
- Heart Health

Southwest Region

(**Bates, Benton, Cedar, Henry, Hickory, Morgan, Pettis, St. Clair, Vernon**, Barry, **Barton,** Christian, Dade, Dallas, Greene, Jasper, Lawrence, McDonald, Newton, Polk, Stone, Taney, and Webster Counties)

Community health needs assessments from the following hospitals, health systems, or collaboratives overlapping with the Southwest Region are included here:

- Bates County Memorial Hospital (2016)
- Bothwell Regional Health Center (2016)
- Golden Valley Memorial Hospital (2016)
- Citizens Memorial Hospital (2017)
- Cedar County Memorial Hospital (2017)
- Lake Regional Health System (2015)

Prioritized Health Needs of the Population

- Economic Development
- Substance Abuse
- Access to Primary and Specialty Care Services
- Smoking
- Obesity
- Nutrition
- Access to Dental Health for the Uninsured
- Emergency Department
- Shortage of Medical Professionals
- Access to Mental Healthcare
- Healthcare Transportation
- Suicide Prevention
- Urgent Care Services

- Cost of Care
- Services for Autistic Children/Adults
-

Northwest Region

(**Carroll, Cass, Chariton, Johnson, Lafayette, and Saline** Counties)

Community health needs assessments from the following hospitals, health systems, or collaboratives overlapping with the Northwest Region are included here:

- Carroll County Memorial Hospital (2015)
- Cass Regional Medical Center (2016)
- Western Missouri Medical Center (2017-2019)
- Fitzgibbon Hospital (2016)

Prioritized Health Needs of the Population

- Mental Health
- Obesity, Heart Disease, Cancer, Diabetes, High Blood Pressure
- Primary Care Access
- Preventative Care and Wellness
- Access to Dental Health for the Uninsured
- Lack of Funding for Local Health Department
- Health Literacy
- Substance Use Disorder
- Suicide
- Family Planning Services
- Healthcare Transportation
- Urgent Care Services

Central Region

(**Audrain, Boone, Callaway, Camden, Cole, Cooper, Howard, Miller, Moniteau, Monroe, Montgomery, Osage, Pike, Ralls, Randolph**, Adair, Clark, Knox, Lewis, Macon, Marion, Schuyler, Scotland, and Shelby Counties)

Community health needs assessments from the following hospitals, health systems, or collaboratives overlapping with the Eastern Region are included here:

- Pike County Memorial Hospital (2016-2019)
- Central Missouri Community Health Assessment Partnership (2018)
- Audrain-Montgomery Community Health Assessment Partnership (2018)
- Cooper County Memorial Hospital (2016)
- Lake Regional Health System (2015)

- Boone Hospital Center (2016)

Prioritized Health Needs of the Population

- Obesity in Adults
- Heart Disease Prevention
- Access to Primary and Specialty Care Services
- Access to Telehealth Services
- Smoking
- Access to Mental Healthcare
- Health Literacy
- Access to Prenatal Care
- Substance Abuse
- Dental Care for Adults
- Cancer
- Obesity in Children

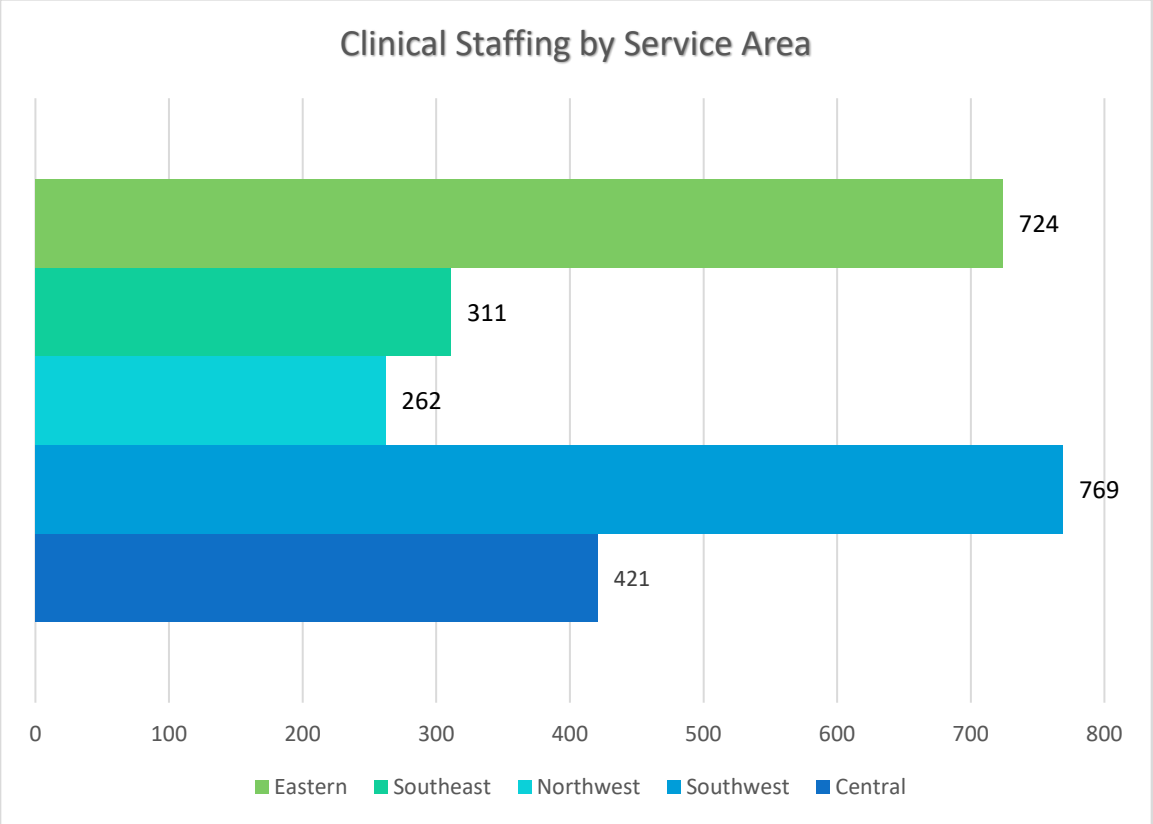
Overview of Compass Health Resources, Facilities, Staffing, and Activity Across Service Areas

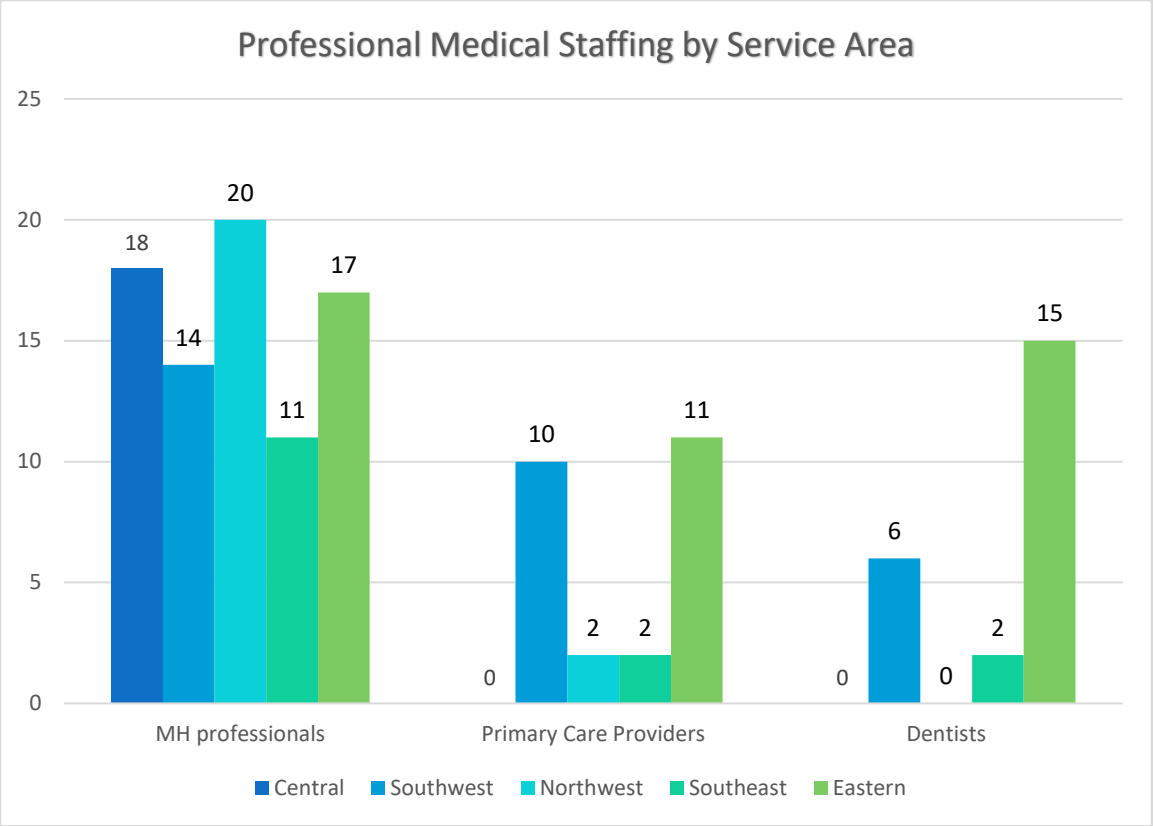
Introduction

The previous sections each speak to and paint a picture of need, with little attention to Compass efforts to meet those needs. This section will provide data and information on gross indicators of resources and activities as distributed across the Compass Health service area, as well as specific indicators of unmet need relative to numbers individuals with Medicaid served. This is only intended as a high-level overview rather than a granular analysis of detailed activities.

Compass Health Clinical Staffing

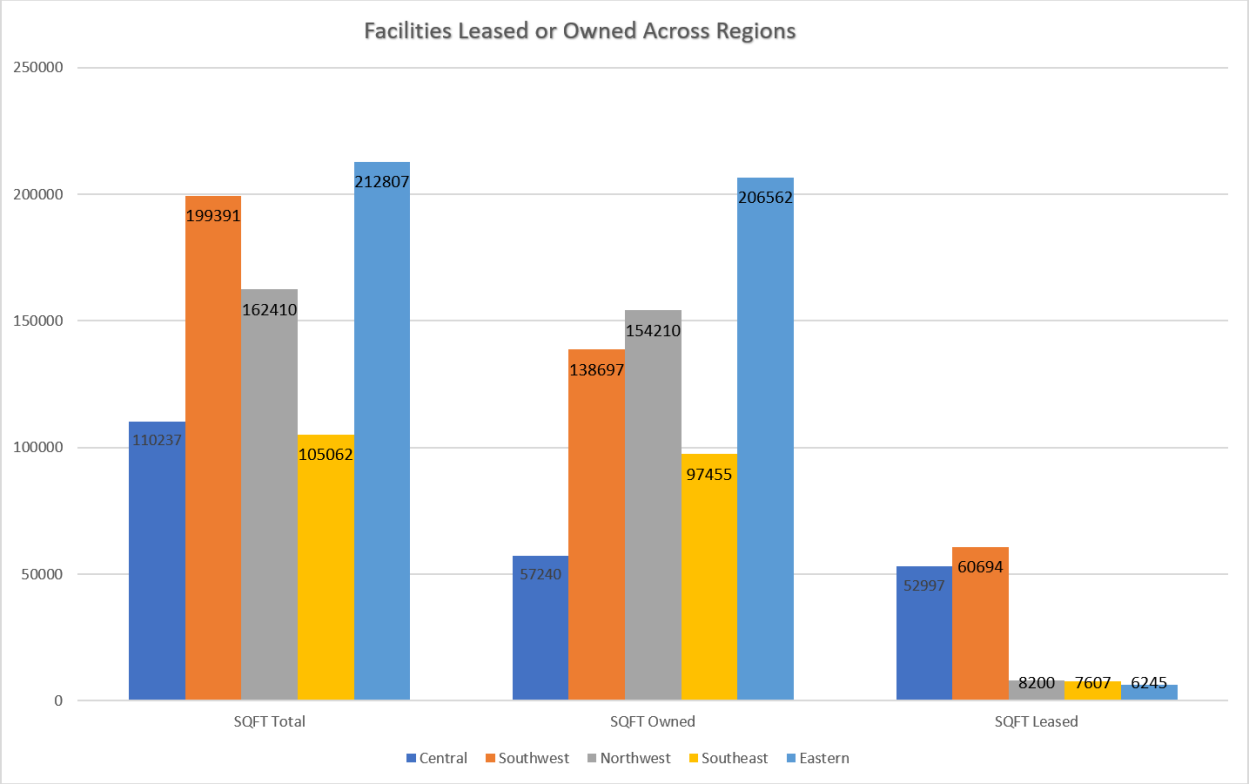
Compass Health employs a variety of health professionals such as Psychiatrists, Psychologists, and Psychiatric Nurse Practitioners, as well as other clinical staff such as therapist, nurses, technicians, etc. The distribution of clinical staffing across the service area is as follows:





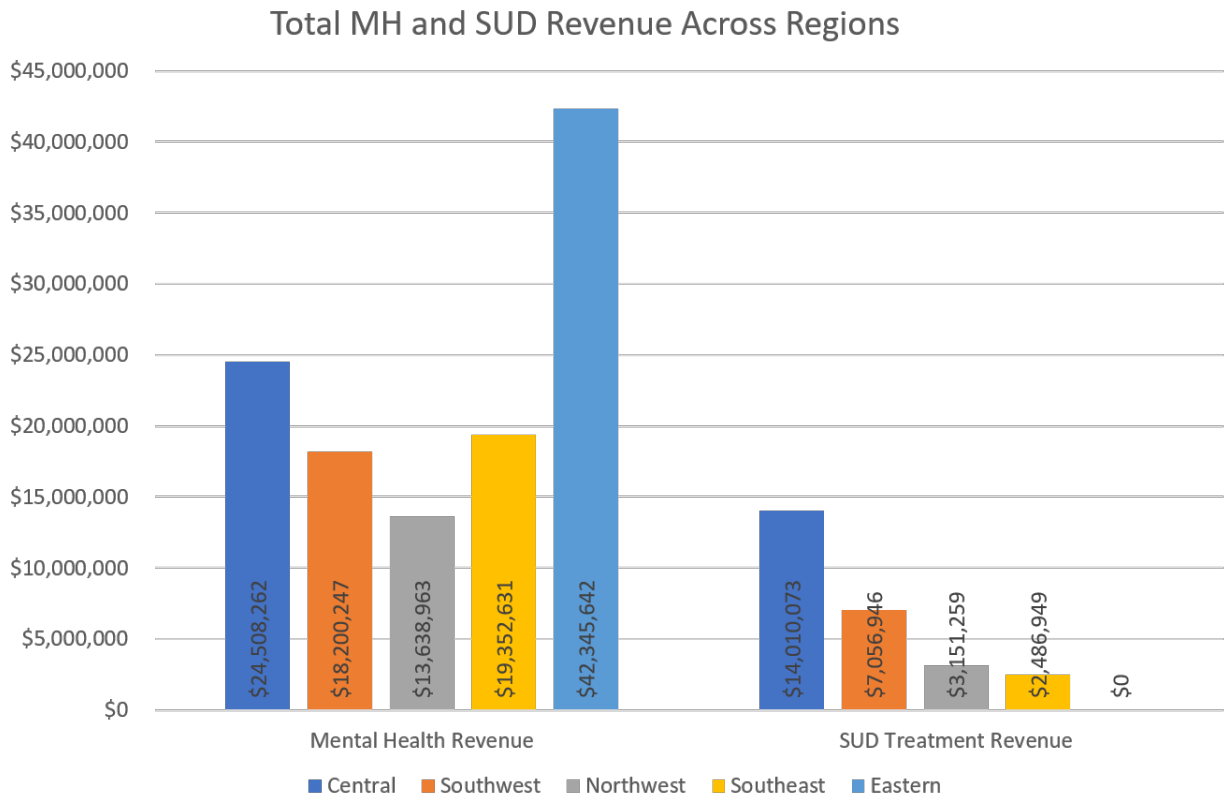
Facilities Across the Service Area

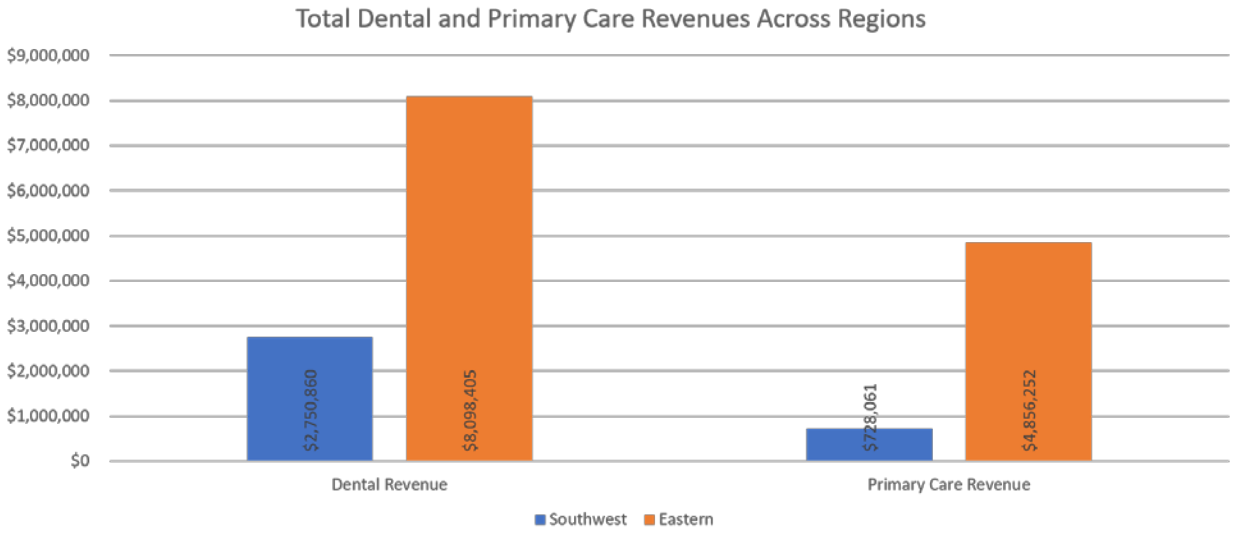
The most concrete indicator of physical presence in each service area is the physical plant footprint of the organization, whether the space is owned or leased. Following is a description of the facilities distribution on a square footage basis:



Revenues Across the Service Area

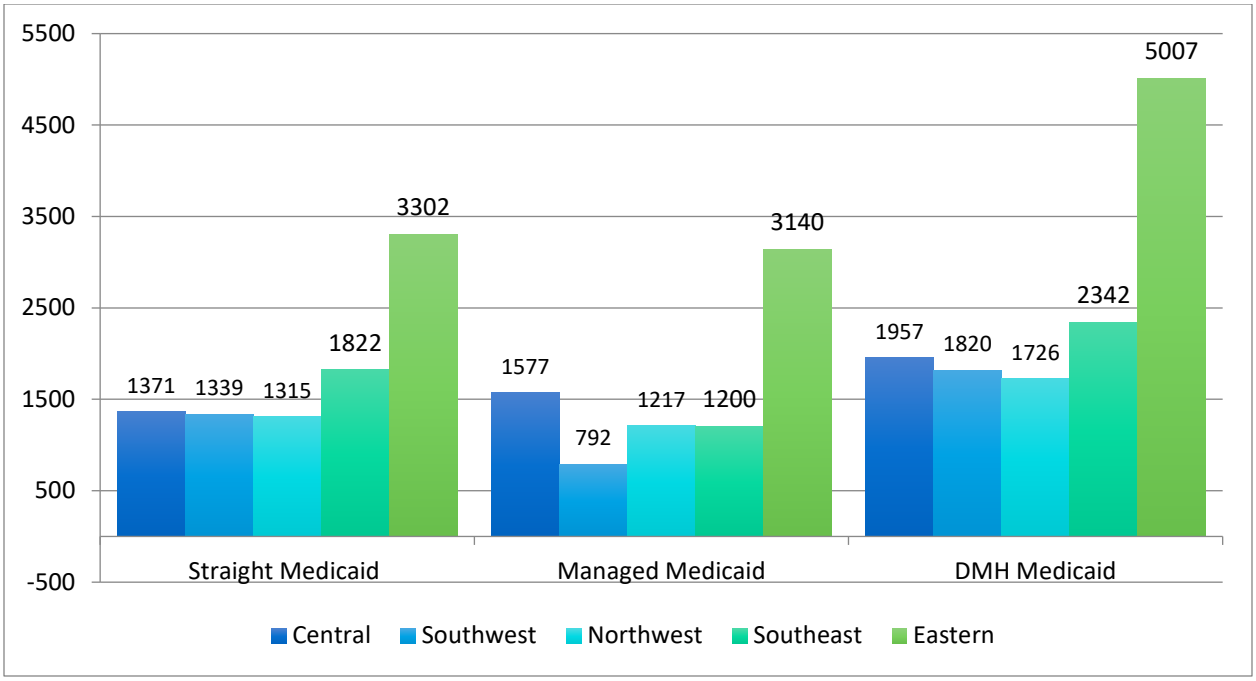
A gross indicator of activity in a given service area is total revenue accruing to that region (although all counties are accounted for, customer and program revenue are assigned to the county in which the program is located, rather than the county in which the customer resides). Following is a description of Compass programmatic activity across the regions, broken down by broad service type:





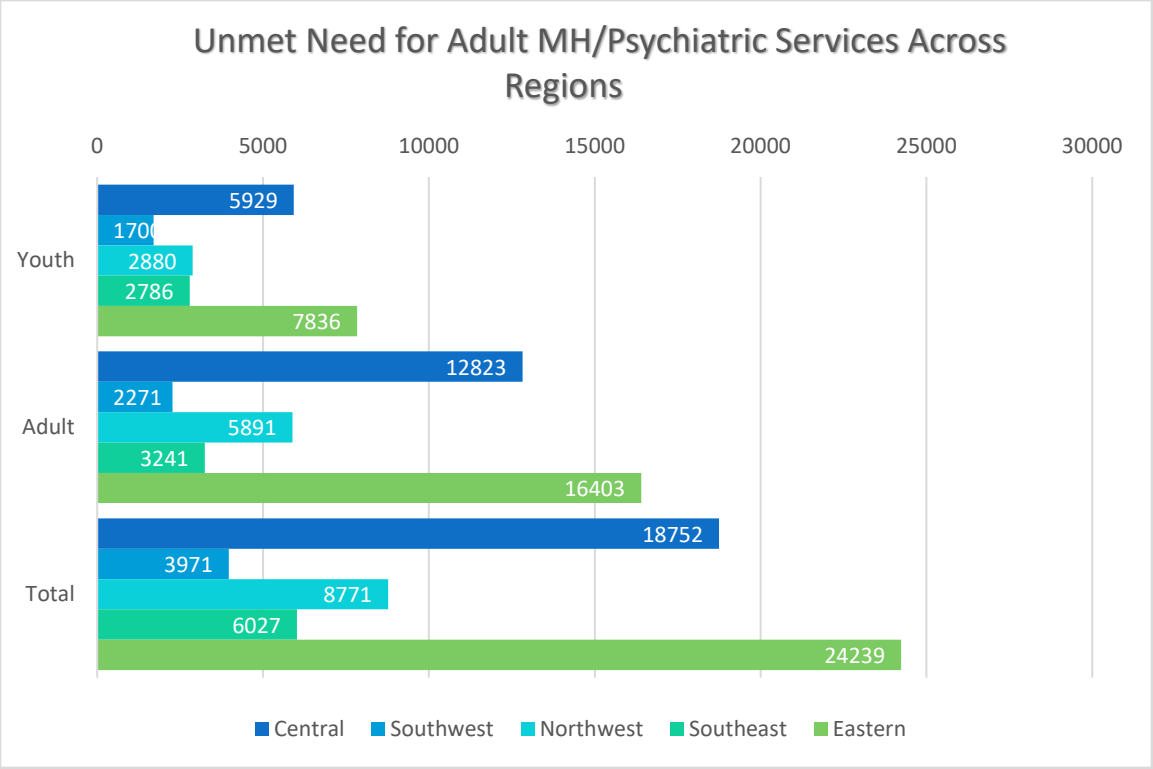
Medicaid Enrollees Served Across the Service Area

Another gross indicator of activity targeting vulnerable populations in a given service area is the number of Medicaid enrollees served in each region. Following is a description of these numbers:



Unmet Need for Intensive Mental Health Services Across Service Areas

The following chart shows the unmet need for services among both adult and child/youth populations in the Compass Health regions, according to the following formula: Total population by age groups (i.e., under 18 and over 18, from 2015 U.S. Census data), times prevalence estimates for serious emotional disturbance among youth (SED; 7%) and serious mental illness among adults (SMI; 5.4%), minus number of children/youth and adults with Medicaid claims for SED and SMI services (2016). This indicator is distributed as follows:


Unmet Need for Adult MH/Psychiatric Services Across Regions
0
5000
10000
15000
20000
25000
30000
Youth
5929
1700
2880
2786
7836
Adult
12823
2271
5891
3241
16403
Total
18752
3971
8771
6027
24239
Central
Southwest
Northwest
Southeast
Eastern

Synthesis of Findings: Prioritized Needs to Guide Strategic Planning

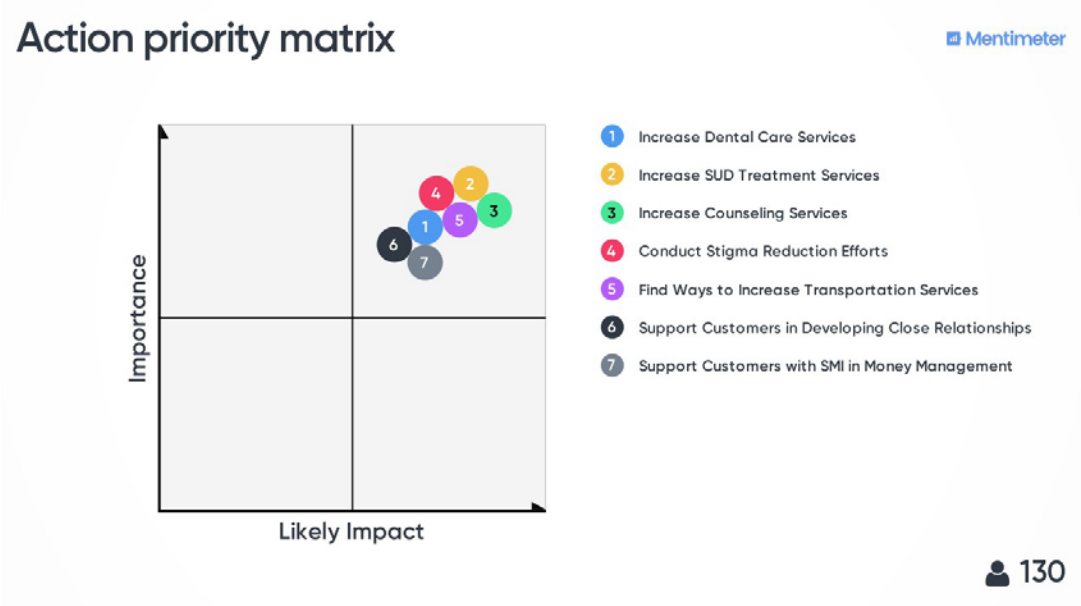
Summary of Cross-Cutting Themes from Quantitative and Qualitative Analysis

- The substance use disorder treatment needs in parts of the Eastern region, coupled with almost no available services reveals an important gap.
- There also appears to be a tremendous need for counseling services, with customers expressing strong desire for more time with their psychiatrists. But what they really seem to need is someone to talk to without the relatively stricter time constraints often inherent in psychiatric visits. Identified barriers were lack of insurance, and cost of service.
- Transportation, both generally and to facilitate appointment keeping, is a nearly ubiquitous issue, especially in rural areas, but is evident even in the more urban areas.
- Stigma and negative attitudes toward those with SUD and mental illness are a clearly emergent theme supported by the evidence. This should be taken seriously as a strategic priority for the organization to the extent that individuals are not accessing services because stigma is such a tall barrier. We should ensure that the face of Compass is welcoming, and its image one in which the whole person can be treated. Compass should redouble our efforts to change attitudes, engage with our community (stakeholders mentioned it at a very high rate), engage with national leadership to do something more impactful to attack stigma at its roots. One root is that health care and social service professionals are often more stigmatizing than the general population, and we should take a serious look at this problem.
- Dental care access is a very significant issue. Focus groups showed that many have a dentist and of course some do not, but even among those who do, many are afraid to go. The organization might evaluate effective practices to reduce fear of dental care, educate customers on the fact that dental care is essential to health (e.g., the well supported systemic inflammation hypothesis indicates that those with untreated oral health problems are more likely to experience cardiac and other chronic illnesses, likely contributing to many years of potential lost life. Of course, untreated oral health issues also exacerbate mental illness symptoms and functioning. Dental needs are particularly acute in our rural areas.
- The structured assessment of customer needs showed significant unmet needs in the area of developing and maintaining close, intimate, supportive relationships. The more we help customers with these crucial human needs, the better their functioning and wellness will be. This also relates to and interweaves with other needs mentioned: psychological distress can be alleviated through close, nourishing personal and social relationships as well as professional counseling relationships.
- Benefits and Money: customers with serious mental illness report unmet need for more help and education about how to manage money, and feel more in control of finances.

- Physical health: We should celebrate the effectiveness with which we help customers meet their physical health care needs, as nearly all focus group participants indicated they had a regular doctor and could get appointments reasonably quickly and easily (but transportation to the appointments is a barrier).
- If we are to look for the areas of greatest unmet need according to our indicators, we should look at DMH SA8B and SA17B. There are tremendous problems relating to longevity and quality of life, they have the highest health care costs, and more disabled veterans, of all regions.

Priority Action Matrix

As a final step before bringing the results of the needs assessment to the Board of Directors, the above findings were presented to the large staff management meeting (with approximately 150 attendees), and they were asked in an interactive real-time exercise to rate each of the identified needs on two dimensions, importance and likely impact, with the following results:



These results suggest that the needs assessment process has resulted in identification of needs that are broadly agreed upon and supported by Compass executives and managers, and also provide prioritization for where to place our efforts for maximum impact.

Conclusion

When this process began, we asked *what do we want to know* from this needs assessment. Although we had ideas about better understanding our regions, identifying areas of unmet needs, and finding ways to better serve vulnerable populations, it became clear that what we really need is *to know what we want to know*. In order to identify needs, the process started with

identifying all of the highest quality available data. Focus groups were conducted of clients and community stakeholders, surveys were conducted of staff and other stakeholders, community health needs assessments were harvested for priority needs, and more.

Each table and chart in this document represents meticulous efforts to clearly present what is known about Compass regions. Hundreds of thousands of data points were arranged into the pictures that wordlessly describe the scope of unmet need. Our successes appear in shaded cells and human heartbreak is splashed in red. The hope is that with this actionable knowledge in hand, all that we know, we can collectively contemplate and strategize to determine the best ways forward.

We should now begin the process of further winnowing and clarifying. What among these data points is most important? What questions arise from their examination? About what do we wish to know more? What clever combination of these data would help to address questions, the answers to which, will empower us to more effectively reach our communities?

References

Major Depression & Bipolar Disorder: The NCS-R dataset was used to calculate specific age * gender prevalence rates. Overall 12-month prevalance is 6.8% of the adult population for depression and 2.8% for bipolar disorder.

- National Comorbidity Survey—Replication: http://www.hcp.med.harvard.edu/ncs_data.php

Schizophrenia: Kessler, et al. found the prevalence of schizophrenia to be 0.5% in the U.S. population, but a less conservative estimate comes from the NIMH website, which reports 12-month prevalence at 1.1%.

- Kessler, et al., (2009). The prevalence and correlates of nonaffective psychosis in the National Comorbidity Survey Replication (NCS-R). *Biological Psychiatry.* 58: 668-676.

Anxiety Disorders: Kessler, et al. shows the overall rate of any anxiety disorder is 18.1%, but removing the 43.5% of cases that are “mild” leaves 10.2%. By most published literature, this is a conservative estimate.

- Kessler, et al., (2009). The prevalence and correlates of nonaffective psychosis in the National Comorbidity Survey Replication (NCS-R). *Biological Psychiatry.* 58: 668-676.

Presenteeism: In research conducted for the NCQA Quality Dividend Calculator, 30 presenteeism days per year were attributed to depression, which when applied to 250 working days, yields a 12% loss.

- www.ncqacalculator.com

Lost Earnings from Unemployment

- Kessler, et al. (2008). Individual and societal effects of mental illness on earnings in the United States. *American Journal of Psychiatry.* 165: 703-711.

Lost Earnings Due to Premature Death by Suicide

- Bureau of Business & Economic Research (2011).

Appendix A: Data Dictionary and Data Sources for Indicators

Indicators Used

Access to exercise opportunities	Percentage of the population with access to places for physical activity
Adult obesity	Percentage of adults that report BMI >= 30
Adult smoking	Percentage of adults that reported currently smoking
Alcohol-impaired driving deaths	Percentage of driving deaths with alcohol involvement
Asthma	Derived from "yes" responses to the following questions: Have you ever been told by a doctor, nurse, or other health professional that you had asthma? AND Do you still have asthma?
Binge drinker	% reporting they have consumed 4 (women) or 5 (men) or more drinks on a single occasion in the past 30 days
Cancer	Derived from "Yes" response to the following question: Have you ever been told by a doctor, nurse or other health professional that you had cancer?
Children eligible for free or reduced price lunch	Percentage of children enrolled in public schools K-12 eligible for free or reduced lunch.
Children in poverty	Percentage of children (under age 18) living in poverty
Children in single-parent households	Percentage of children that live in single-parent households
COPD	Derived from "Yes" response to the following question: Has a doctor, nurse or other health professional ever said that you have COPD (chronic obstructive pulmonary disease), emphysema or chronic bronchitis?
Coronary heart disease	Derived from "Yes" response to the following question: Has a doctor, nurse or other health professional ever said you had angina or coronary heart disease?
Cost	% of "Yes" responses to "Was there a time in the past 12 months when you needed medical care, but could not get it?" AND "Would you say cost/no insurance" response to "What is the main reason you did not get medical care?"
Couldn't get needed dental care	% responding that they needed dental care and could not get it in the past year
Dentists	Dentists per 100,000 population
Depression	Derived from "Yes" response to the following question: Has a doctor, nurse or other health professional ever said that

	you have a depressive disorder (including depression, major depression, dysthymia, or minor depression)?
Diabetes	Derived from "yes" response to the following question: Have you ever been told by a doctor that you have diabetes?
Diabetes monitoring	Percentage of diabetic Medicare enrollees receiving HbA1c test
Diabetes prevalence	Percentage diagnosed with diabetes
Did not get needed medical care	% of "Yes" responses to the question, "Was there a time in the past 12 months when you needed medical care, but could not get it?"
Disabled veterans	% veterans receiving disability benefits
Disconnected youth	Percentage of youth ages 16-24 who are neither in school nor working
Drug overdose deaths	# of deaths by drug overdose
Drug overdose deaths - modeled	Modeled estimate of number of drug overdose deaths per 100,000 population
Excessive drinking	Percentage of adults that report excessive drinking, defined consuming 4 or 5 drinks on a single occasion in the past 30 days, or more than one or 2 drinks per day on average.
Firearm fatalities	Number of firearm deaths per 100,000 population
Food environment index	Indicator of access to healthy foods - 0 is worst, 10 is best
Food insecurity	Percentage without reliable access to foods in the past year
Frequent mental distress	Percentage reporting frequent mental distress
Frequent physical distress	Percentage reporting frequent physical distress
Health care costs	Price-adjusted Medicare reimbursements (Part A and B) per enrollee
Health limits activities	Number of days per month in which health limits activities
Heavy drinker	% reporting they drink 1 (women) or 2 (men) or more drinks per day on average
High blood pressure	% responses of any length of time to the question, "About how long has it been since you last had your blood pressure checked? AND "Yes" response to the following question: Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
High school graduation	Graduation rate
HIV prevalence	Percentage diagnosed with HIV

Homicides	Number of deaths from assaults per 100,000 population
Income inequality	Ratio of household income at the 80th percentile to income at the 20th percentile
Injury deaths	Injury mortality rate per 100,000.
Insufficient sleep	Percentage who report sleeping an average of 7 hours or less per night
Limited access to healthy foods	Percentage that are low income and do not live close to a grocery store
Low birth weight	Percentage of births with low birth weight (<2500g)
Mammography screening	Percentage of female Medicare enrollees having at least 1 mammogram in 2 yrs (age 67-69)
Median household income	The income level where half of households in a county earn more and half of households earn less
Mental health providers	Mental Health Providers per 100,000 population
Motor vehicle crash deaths	Number of motor vehicle crash deaths per 100,000 population
Myocardial Infarction	Derived from “Yes” response to the following question: Has a doctor, nurse or other health professional ever said you had a heart attack, also called myocardial infarction?
No recent dental exam	% indicating they have not had a dental exam within the past year
No regular doctor	% reporting they do not have what they consider a “regular doctor”
Number of veterans	# of veterans
Other	% of “Yes” responses to “Was there a time in the past 12 months when you needed medical care, but could not get it?” AND “distance, office wasn't open when I could get there, too long a wait for an appointment, too long a wait in waiting room, no childcare, no access for people with disabilities, the medical provider didn't speak my language, or other?”
Other primary care providers	Ratio of county population to the number of other primary care providers, including nurse practitioners.
Physical inactivity	Percentage of adults that report no leisure-time physical activity
Poor mental health days	Average number of reported mentally unhealthy days per month
Poor or fair health	Percentage of adults that report fair or poor health
Poor physical health days	Average number of reported physically unhealthy days per month
Population	Total population of the county

Premature death	Age-adjusted YPLL rate per 100,000
Preventable hospital stays	Discharges for Ambulatory Care Sensitive Conditions per 1,000 Medicare Enrollees
Primary care physicians	Primary Care Physicians per 100,000 population
Residential segregation - black/white	The degree to which two or more groups live separately from one another in a geographic area. Interpreted as the percentage of black or white residents that would have to move to different geographic areas in order to produce a distribution that matches that of the larger area.
Residential segregation - non-white/white	The degree to which two or more groups live separately from one another in a geographic area. Interpreted as the percentage of non-white or white residents that would have to move to different geographic areas in order to produce a distribution that matches that of the larger area.
Severe housing problems	Percentage of households with at least 1 of 4 housing problems: overcrowding, high housing costs, or lack of kitchen or plumbing facilities
Sexually transmitted infections	Chlamydia cases per 100,000 population
Social associations	Associations per 10,000 population
Some college	Percentage of adults age 25-44 with some post-secondary education
Suicide	Number of suicides per 100,000 population
Teen births	Births per 1,000 females ages 15-19
Transportation	% of “Yes” responses to “Was there a time in the past 12 months when you needed medical care, but could not get it?” AND “transportation” response to “What is the main reason you did not get medical care?
Unemployment	Percentage of population ages 16+ unemployed and looking for work
Uninsured	Percentage of people under age 65 without insurance
Uninsured adults	Percentage of the population ages 18-64 that has no health insurance coverage
Uninsured children	Percentage of the population under age 19 that has no health insurance coverage
Veterans in poverty	% veterans below FPL
Violent crime	Violent crimes per 100,000 population
% 65 and older	Percentage of the county population age 65 and older
% American Indian and	Percentage of persons who are American Indians and

Alaskan Native	Alaskan Natives in the county population
% Asian	Percentage of Asian persons in the county population
% below 18 years of age	Percentage of the county population below 18
% Females	Percentage of the county population that is female
% Hispanic	Percentage of Hispanic persons in the county population
% Native Hawaiian/Other Pacific Islander	Percentage of persons who are Native Hawaiian or Other Pacific Islanders in the county population
% Non-Hispanic African American	Percentage of persons who are African Americans in the county population
% Non-Hispanic white	Percentage of White persons in the county population
% not proficient in English	Percentage of county population that is not proficient in English
% Rural	Percentage of the county that is classified as rural

Data Sources

National Center for Health Statistics - Mortality Files, 2013-2015
Behavioral Risk Factor Surveillance System, 2016
National Center for Health Statistics - Natality files, 2010-2016
CDC Diabetes Interactive Atlas, 2014
USDA Food Environment Atlas, Map the Meal Gap from Feeding America, 2015
Business Analyst, Delorme map data, ESRI, & US Census Tigerline Files, 2010 & 2016
Fatality Analysis Reporting System, 2012-2016
National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2015
Small Area Health Insurance Estimates, 2015
Area Health Resource File/American Medical Association, 2015
Area Health Resource File/National Provider Identification file, 2016
CMS, National Provider Identification, 2017
Dartmouth Atlas of Health Care, 2015
EDFacts, 2014-2015
American Community Survey, 5-year estimates, 2012-2016
Bureau of Labor Statistics, 2016
Small Area Income and Poverty Estimates, 2016
County Business Patterns, 2015
Uniform Crime Reporting – FBI, 2012-2014
CDC WONDER mortality data, 2012-2016
Census Population Estimates, 2016
Missouri Department of Health and Senior Services, Missouri County-Level Study (CLS). 2016
CDC Causes of Death Statistics, suicide, Dec 2017

Appendix B: Literature Citations for Untreated Mental Illness

Literature and Data Used for Prevalence Rates of Severe Mental Illness

Major Depression

The NCS-R dataset was used to calculate specific age * gender prevalence rates. Overall 12-month prevalence is 6.8% of adult population. National Comorbidity Survey - Replication: http://www.hcp.med.harvard.edu/ncs/ncs_data.php

Bipolar Disorder

The NCS-R dataset was used to calculate specific age * gender prevalence rates. Overall 12-month prevalence is 2.8% of adult population. National Comorbidity Survey - Replication: http://www.hcp.med.harvard.edu/ncs/ncs_data.php

Schizophrenia

Kessler et al. The Prevalence and correlates of nonaffective psychosis in the National Comorbidity Survey Replilcation (NCS-R). *Biol Psychiatry* 2005;58:668-676.

Kessler et al. found that the prevalence of schizophrenia to be 0.5% in the U.S. population (range, 0.3% - 1.6%) in the NCS-R survey. A less conservative estimate comes from the NIMH website, which reports 12-month prevalence of 1.1% in the U.S. adult population. Rates by age and gender are not available. [Regier DA, Narrow WE, Rae DS, Manderscheid RW, Locke BZ, Goodwin FK. The de facto mental and addictive disorders service system. Epidemiologic Catchment Area prospective 1-year prevalence rates of disorders and services. Archives of General Psychiatry. 1993 Feb;50(2):85-94]

Anxiety Disorders

Kessler et al. The Prevalence and correlates of nonaffective psychosis in the National Comorbidity Survey Replilcation (NCS-R). *Biol Psychiatry* 2005;58:668-676.

Table 1 of Kessler et al. shows the overall rate of ANY ANXIETY DISORDER is 18.1%. However, removing the 43.5% of cases that are "mild", leaves 10.2%. By most accounts in the published literature (using less representative samples or much older data), this is a conservative estimate. 10.2% is also closer to an estimate arrived at by DuPont et al (1996), who took the Epidemiological Catchment Area data to calculate that 23.2 million people suffer from Anxiety Disorder during a 1-year period (1990 U.S. adult population = 184.18 million, which would equate to a prevalence rate of 12.6%)

Kroenke et al. (2007) in a study of 965 randomly-selected patients found that 19% had at least one anxiety disorder, although serverity was not assessed. This did not include Obsessive-Compulsive Disorder.

In the Kessler et al. article, no differences are reported by sex.

Literature and Data Used for Model Assumptions

Suicide and Serious Mental Illness

Data used from the National Violent Death Reporting System (NVDRS), 2009 data: http://wisqars.cdc.gov:8080/nvdrs/nvdrsDisplay.jsp
Other articles showing a link between serious mental illness and suicide:

Colton CW, Manderscheid RW. Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Preventing Chronic Disease: Public Health Research, Practice, and Policy* 2006;3(2):1-14.

Hollander, E., Stein, D., Kwon, J.H., et al. Psychological function and economic costs of obsessive-compulsive disorder. *CNS Spectrums* 2:16, 1997.

http://www.nami.org/Content/ContentGroups/E-News/20023/March_20022/Suicide_in_the_United_States.htm

Incarceration and Serious Mental Illness

The rate of incarceration in the United States is 743 per 100,000 population, as of year-end 2009. References: [Correctional Populations in the United States, 2009. NCJ 231681. By Lauren Glaze. December 21, 2010. United States Bureau of Justice Statistics. See page 2 of the PDF file for the percent of adults under correctional supervision. See appendix table 2 for the incarceration totals, breakdown, and rates. Its numbers are the custody numbers that avoid the duplication of jurisdiction numbers and multiple correctional statuses. For an explanation see the text box on page one.]
Estimates vary widely, but studies have shown that those with severe mental illness have an incarceration rate about 10 times greater than the general population in the United States. Below are some of these studies:

McNiel DE, Binder RL, Robinson JC, Incarceration associated with homelessness, mental disorder, and co-occurring substance abuse. *Psychiatric Services* 2005; 56(7):840-846.

Prince JD, Akincigil A, Bromet E. Incarceration rates of persons with first-admissions psychosis. *Psychiatric Services* 2007; 58(9):1173-1180.
Quanbeck CD et al. Relationship between criminal arrest and community treatment history among patients with bipolar disorder. *Psychiatric Services* 2005; 56(7):847-852.
Draine J et al. Role of social disadvantage in crime, joblessness, and homelessness among persons with serious mental illness. *Psychiatric Services* 2002; 53(5):565-573.
Wallace C, Mullen PE, Burgess P. Criminal offending in schizophrenia over a 25-year period marked by deinstituationalization and increasing prevalence of comorbid substance use disorders. *Am J Psychiatry* 2004; 161:716-727.

Percent of homeless with mental illness who are untreated

Culhane et al. (1998) found that only 10.8% of homeless with mental illness were receiving treatment; 89.2% were untreated. This may be a conservative estimate given that this study was on those admitted to public shelters. Those not in shelters may have a lower rate of receiving treatment.

Culhane DP, Averyt JM, Hadley TR. The rate of public shelter admission among Medicaid-reimbursed users of behavioral health services. *Psychiatric Services* 1997; 48(3):390-392.

Increased unemployment rate in cases with untreated mood disorders

Schultz & Rogers (2010) estimate that the unemployment rate for those with mood disorders is 27%. Compared to about 9% of those without mood disorders, the difference is 18%, of which we conservatively estimate that half is due to lack of treatment.

Schultz IZ, Rogers ES, editors (2010). *Work Accomodation and Retention in Mental Health*. London: Springer.

Increased unemployment rate in cases with untreated anxiety disorders

Rapaport et al. (2005) reports unemployment rates in those with anxiety disorders of 20-40%. We use 30% in this work. Compared to a national unemployment rate of 9%, the difference is 21%. We attribute slightly less than half of that to UNTREATED anxiety disorders, for 10% unemployment rate.

Rapaport MH, Clary C, Fayyad R, Endicott J. Quality-of-life impairment in depressive and anxiety disorders. *Am J Psychiatry* 2005;162:1171-8.

Increased unemployment rate in cases with untreated schizophrenia

According to McAlpine and Warner (2002), approximately 22% to 40% of schizophrenics have employment. Using a 30% employment rate, or a 70% unemployment rate in working-age adults, compared to 20% in the general population = 50% additional unemployment attributed to schizophrenia. We conservatively estimate half of that to UNTREATED schizophrenia.
McAlpine D, Warner L (2002). Barriers to Employment among Persons with Mental Illness: A Review of the Literature. Working paper, Disability Research Institute, University of Illinois at Urbana-Champaign, USA.

Literature and Data Used for Calculating Results

Percentage of Untreated Cases of Depression

56.8% of those with disorder are receiving treatment (12-month any service use):
http://www.nimh.nih.gov/statistics/1MDD_ADULT.shtml
Greenberg et al. (2003) estimated from NCS-R data that 56.4% were untreated in 2000 (page 1467).

Percentage of Untreated Cases of Bipolar Disorder

55.5% of those with disorder are receiving treatment (12-month any service use)
http://www.nimh.nih.gov/statistics/1BIPOLAR_ADULT.shtml

Percentage of Untreated Cases of Schizophrenia

64.3% of those with disorder are receiving treatment (12-month any service use)
http://www.nimh.nih.gov/statistics/1SCHIZ.shtml

Percentage of Untreated Cases of Anxiety Disorders

Kroenke et al. (2007) Study of 965 randomply sampled patients showed that 41% with at least one anxiety disorder reported not receiving any treatment.

Indirect Costs - Absenteeism

From research conducted for the NCQA Quality Dividend Calculator in 2010, 10 absenteeism days per year were estimated to be attributed to depression. 10 days per year divided by 250 work days per year = 4% loss. (http://www.ncqacalculator.com) This estimate was used for mood disorders in this model.
There were no recent articles that contributed to the research conducted for the QDC in 2010.
For anxiety disorders and schizophrenia, cost-per-case measures were used based on the most recent and comprehensive cost-of-illness studies available: Dupont et al. (1996) and Wu et al. (2005). For schizophrenia, further support came from Rice & Miller (1996).
DuPont RL, et al. Economic costs of anxiety disorders. Anxiety 1996; 2:167-172.
Wu et al. The Economic burden of schizophrenia in the United States in 2002. Journal of Clinical Psychiatry 2005; 66(9):1122-1129.
Rice, D.P., and Miller, L.S. The economic burden of schizophrenia: Conceptual and methodological issues and cost estimates. In: Moscarelli, M; Rupp, A; and Sartorius, N., eds. Handbook of Mental Health Economics and Health Pollicy, Vol. 1. Chichester, U.K.: John Wiley and Sons, 1996.

Lost Earnings from Unemployment

Kessler et al. (2008) estimated that men with SMI earned $26,435 less and women with SMI earned $9302 less than what was expected (regression analysis of NCS-R data)
The authors estimate that 25% of this figure is due to unemployment.

Lost Earnings due to Premature Death (Suicides)

The calculation used was: (# of suicides attributed to depression) multiplied by (22 working years left, since the average age of suicides is 43.4 for males and 42.2 for females) multiplied by (39,945, the per capita personal income in the U.S., released in September 2011 by the Bureau of Business & Economic Research)

Direct Costs

The most recent and comprehensive cost-of-illness studies were used for most estimates of direct costs. For mood disorders, Greenberg et al. (2003) was used. For anxiety disorders, DuPont et al. (1996) was used. For schizophrenia, Wu et al. (2005) was used. Social Security disability payments were estimated from the Annual Statistical Report of the Social Security Disability Insurance Program, 2010.
Greenberg et al. The economic burden of depression in the United States: How did it change between 1990 and 2000? J Clin Psychiatry 2003; 64(12): 1465-1475.
DuPont RL, et al. Economic costs of anxiety disorders. Anxiety 1996; 2:167-172.
Wu et al. The Economic burden of schizophrenia in the United States in 2002. Journal of Clinical Psychiatry 2005; 66(9):1122-1129.

Suicides

There were 103 suicides in the Kansas counties of Allen, Johnson, and Wyandotte in 2010. That is 1 per 5088 or 19.7 per 100,000 (for all age groups). Suicide data by Missouri counties was not available. The national U.S. suicide rate is 15.8 per 100,000 who are 20+ years old. Taking these statistics into account, a conservative estimated suicide rate of 15.0 per 100,000 population was used.

The National Violent Death Reporting System, 2009 data, reported that 41.8% of suicides had "current depressed mood" and 44.9% had "current mental health problem" (not mutually exclusive). We conservatively estimate that 40% of suicides are attributed to mental illness. Previous cost of illness studies have attributed anywhere from 10% - 60% of suicides attributed to mental illness. The upper end of that range has been more common.

Incarcerations

Those with mental illness are 10 times more likely to be incarcerated, compared to the general population.

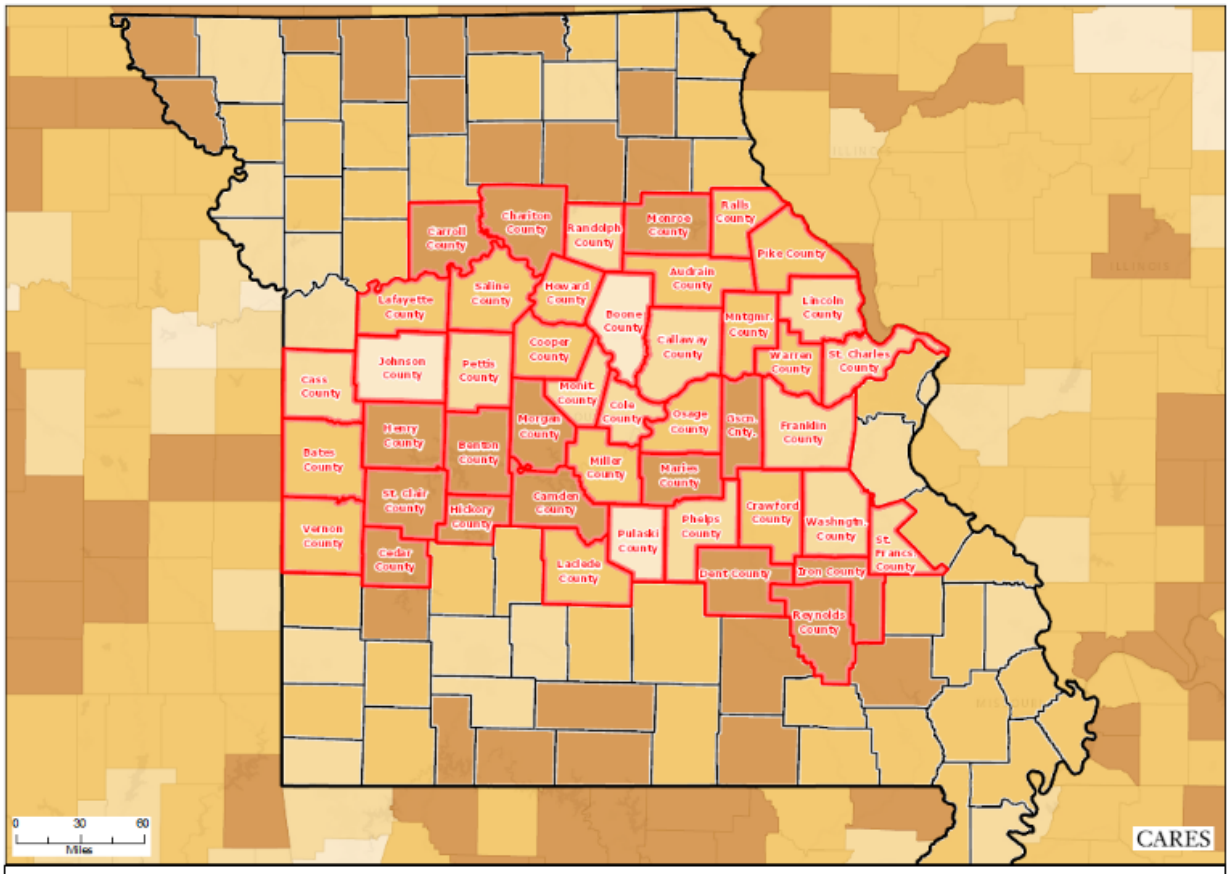
Prince JD, Akincigil A, Bromet E. Incarceration rates of persons with first-admission psychosis. Psychiatric Services, 2007 58:9:1173-1180

Who Pays?

For the distribution of direct medical costs, estimates were used from Mental Health Financing in the United States: A Primer, Kaiser Family Foundation, April 2011. For the allocation of Medicaid costs between state and federal, we used State Health Facts, Kaiser Family Foundation, Federal and State share of Medicaid Spending, FY 2009.
For state tax burden estimates, data from the Tax Foundation (http://www.taxfoundation.org) was used: they tend to take into account both income and sales tax burden for individuals, whereas other sources typically focus just on state taxes.
For federal taxes at the individual level, a 1.85% tax rate was taken from the Tax Foundation for Federal Income tax, 6.2% for Social Security tax (not the reduced rate of 4.2% currently in place that may be extended further until the economy recovers), and 1.45% for Medicare.
For corporate taxes, an estimate of 3.42% was taken from the IRS statistics compiled by The Tax Policy Center (http://www.taxpolicycenter.org) as a typical profit rate on which corporate taxes are paid. A 35% federal corporate income tax rate is assumed, 7% for KS, and 6.25% for MO, from the Tax Foundation.

Appendix C: Hot Spot Health Status and Demographic Maps

Percent Age 65+



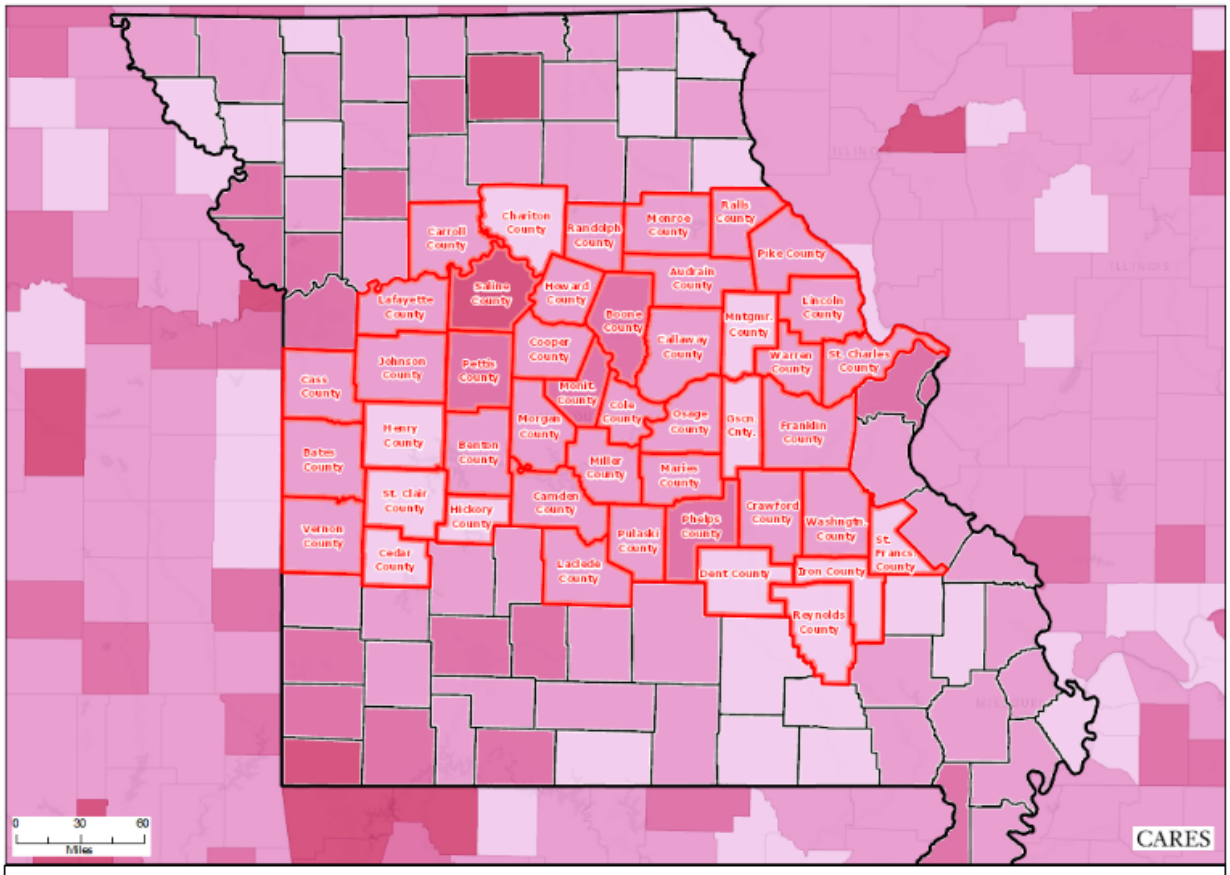
Map Legend

Population Age 65+, Percent by County, ACS 2013-17
- Over 20.0%
- 16.1 - 20.0%
- 12.1 - 16.0%
- Under 12.1%
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Population In Linguistically Isolated Homes



Map Legend

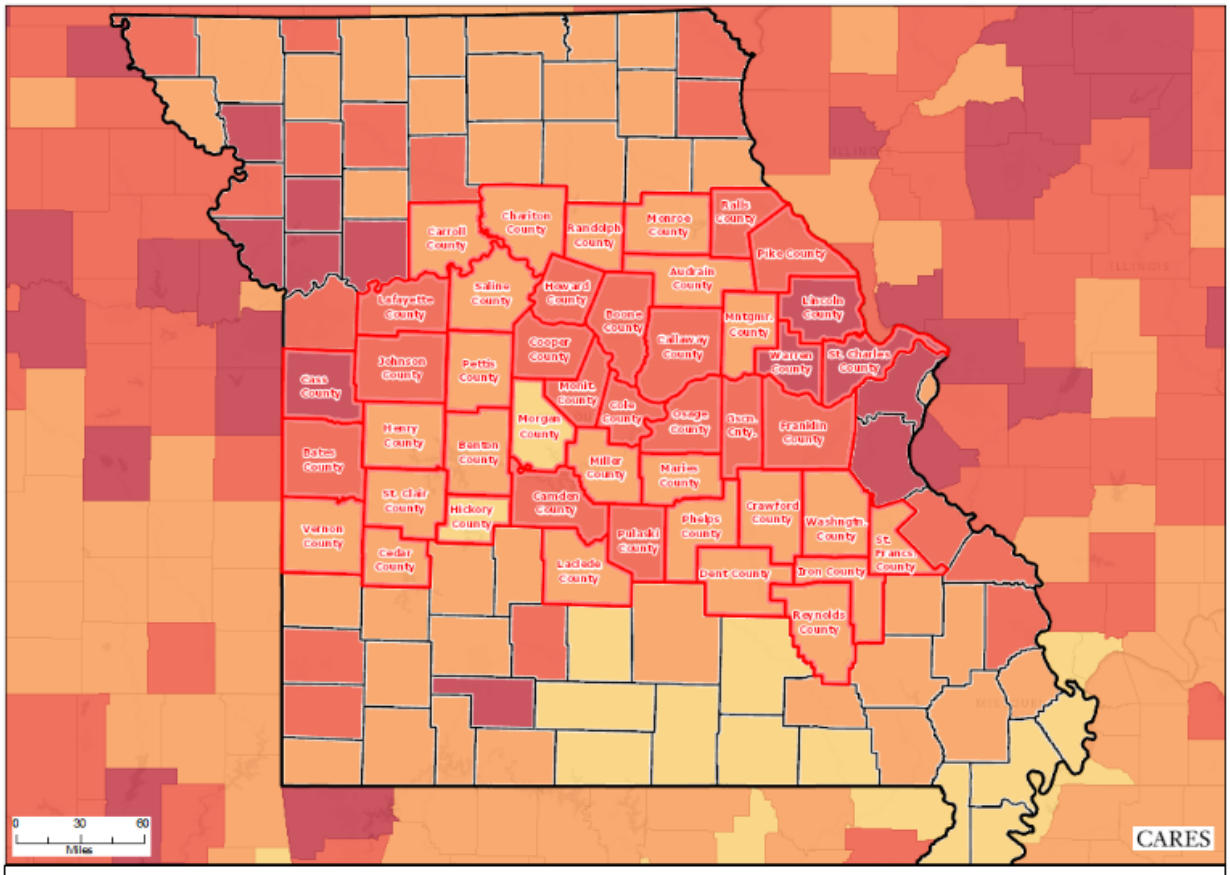
Population in Linguistically Isolated Households, Percent by County, ACS 2013-17

- Over 3.0%
- 1.1 - 3.0%
- 0.1 - 1.1%
- No Population in Linguistically Isolated Households
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Median Household Income



Map Legend

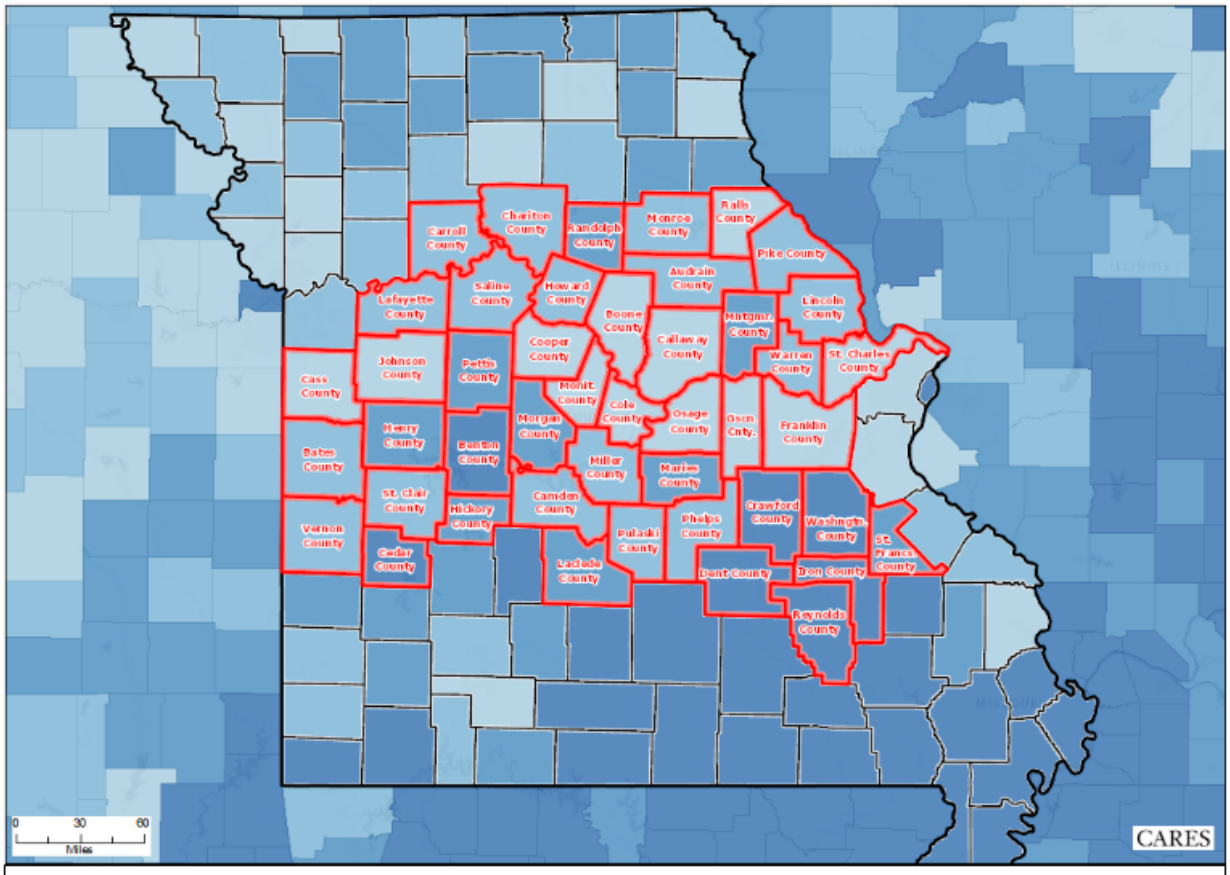
Median Household Income by County, ACS 2013-17

- Over 55,000
- 45,001 - 55,000
- 35,001 - 45,000
- Under 35,001
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Population Receiving Medicaid



Map Legend

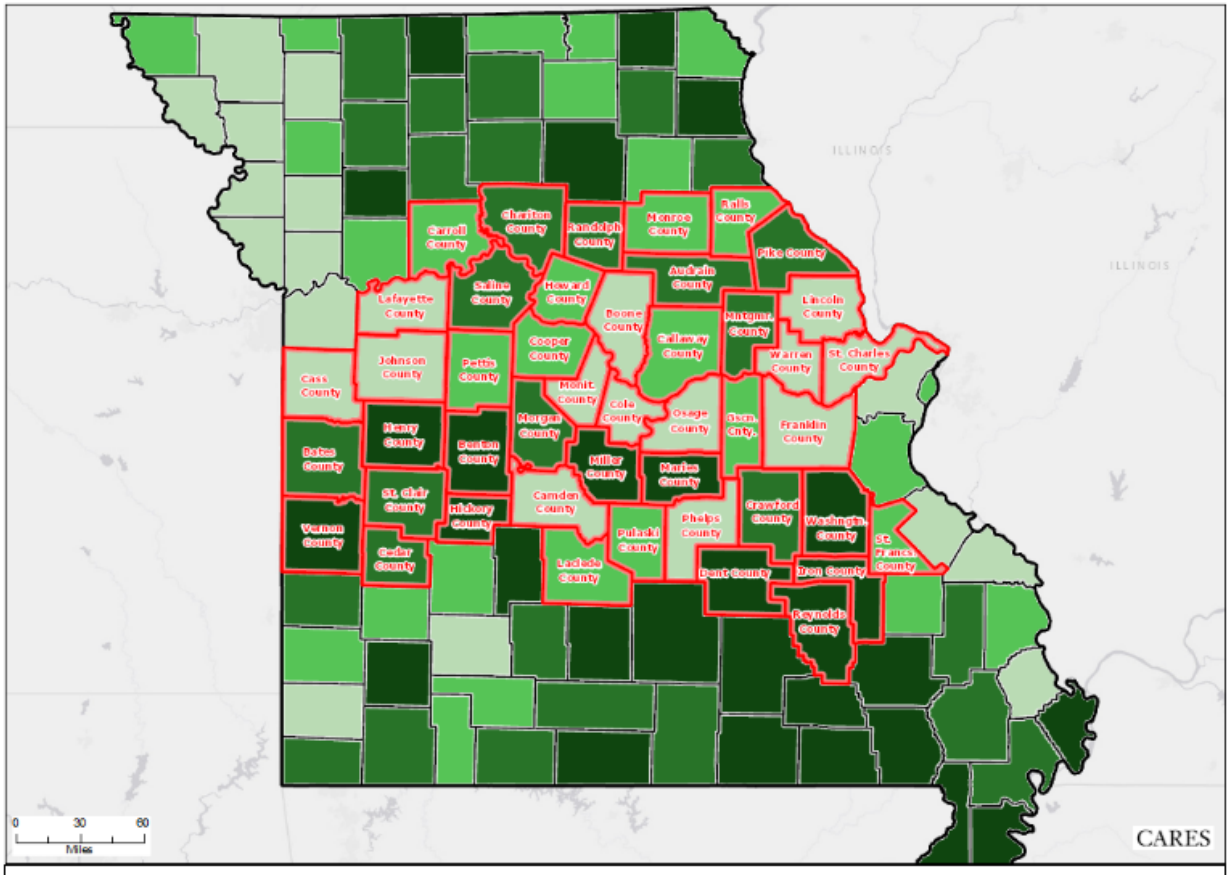
Insured, Medicaid / Means-Tested Coverage, Percent by County, ACS 2013-17

- Over 25.0%
- 20.1 - 25.0%
- 15.1 - 20.0%
- Under 15.1%
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

No Dental Exam Past Year



Map Legend

Dental Exam in Past Year, Percent by County, Missouri CLS 2016

- 60.46 - 76.51
- 54.89 - 60.45
- 50.12 - 54.88
- 37.33 - 50.11

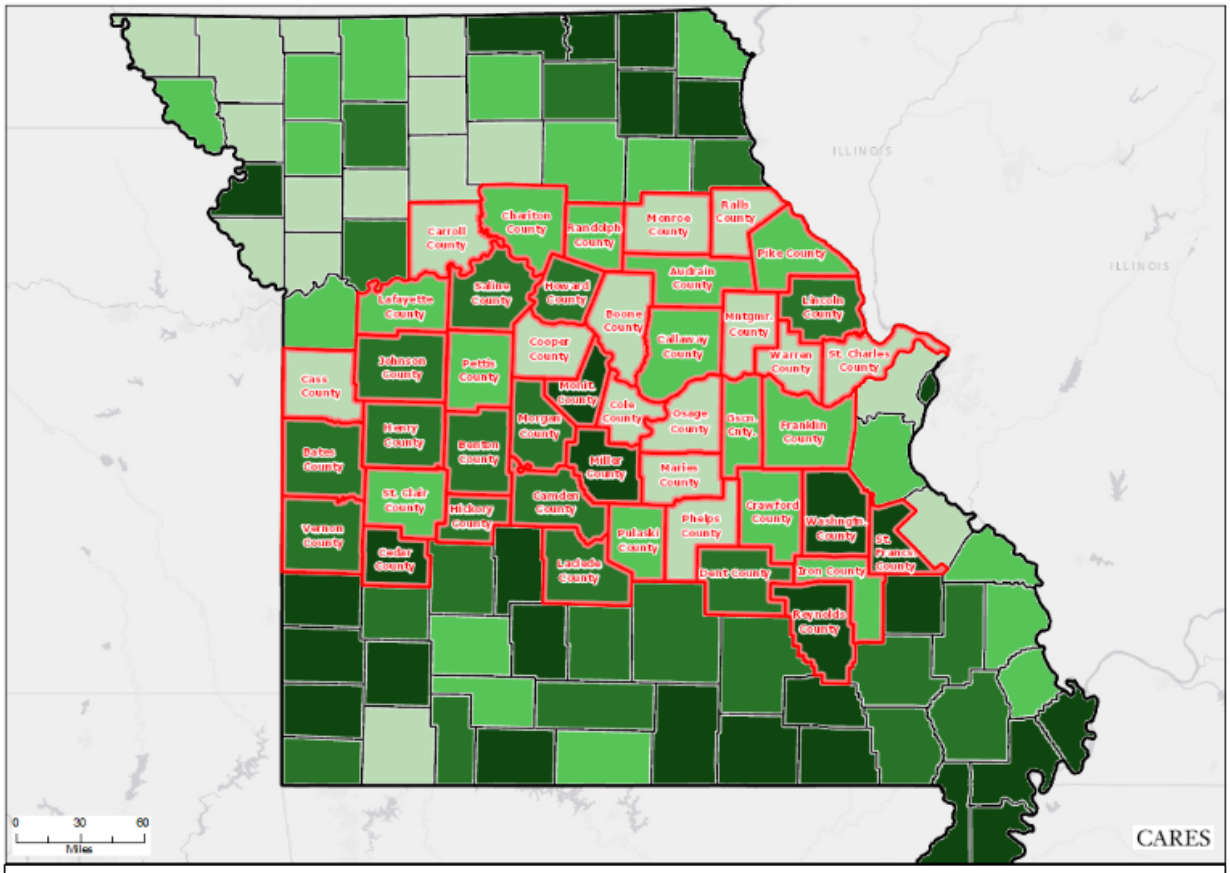
No Dental Exam in Past Year, Percent by County, Missouri CLS 2016

- 49.88 - 62.67
- 45.11 - 49.87
- 39.54 - 45.10
- 23.49 - 39.53

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

No Healthcare Coverage



Map Legend

Health Care Coverage, Percent by County, Missouri CLS 2016

- 90.53 - 96.81
- 87.49 - 90.52
- 84.22 - 87.48
- 63.50 - 84.21

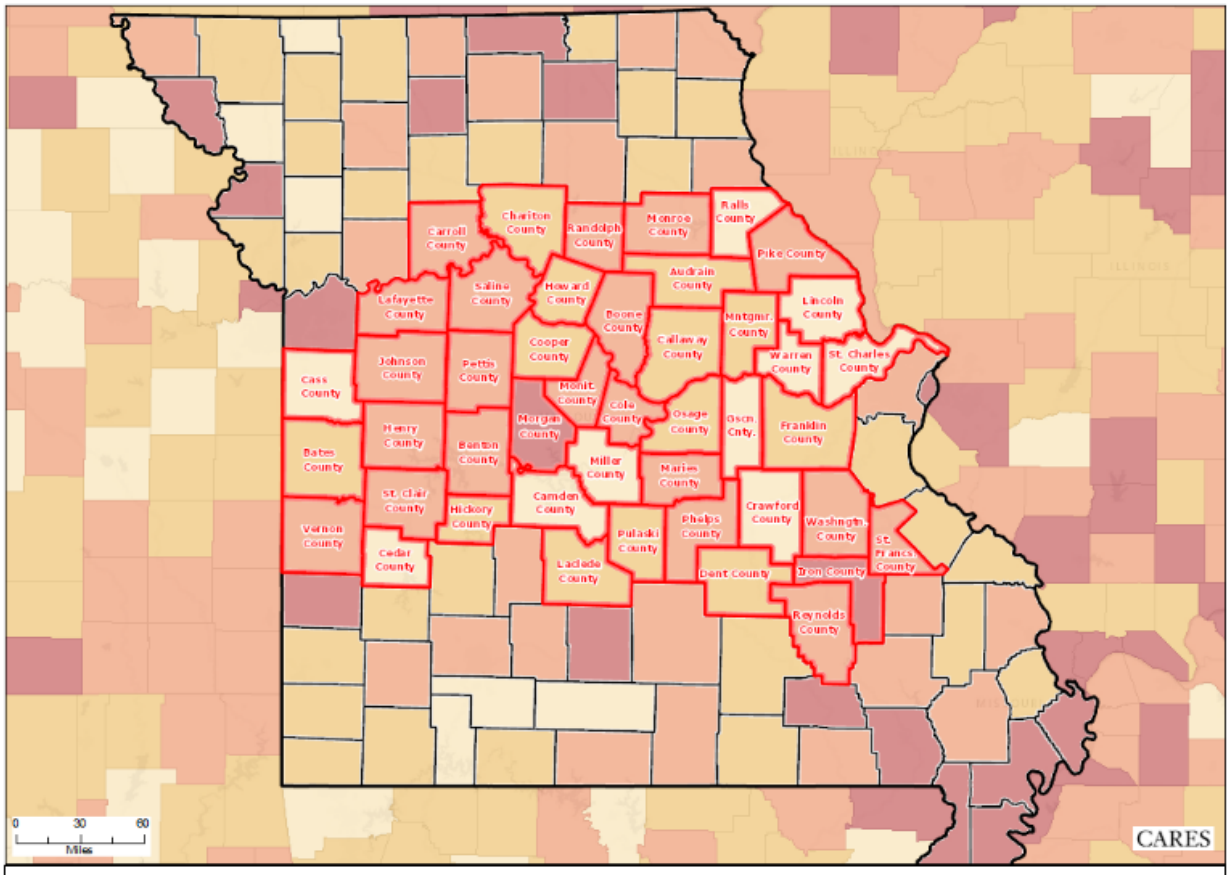
No Health Care Coverage, Percent by County, Missouri CLS 2016

- 15.78 - 36.50
- 12.51 - 15.77
- 9.47 - 12.50
- 3.19 - 9.46

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Households With No Motor Vehicle



Map Legend

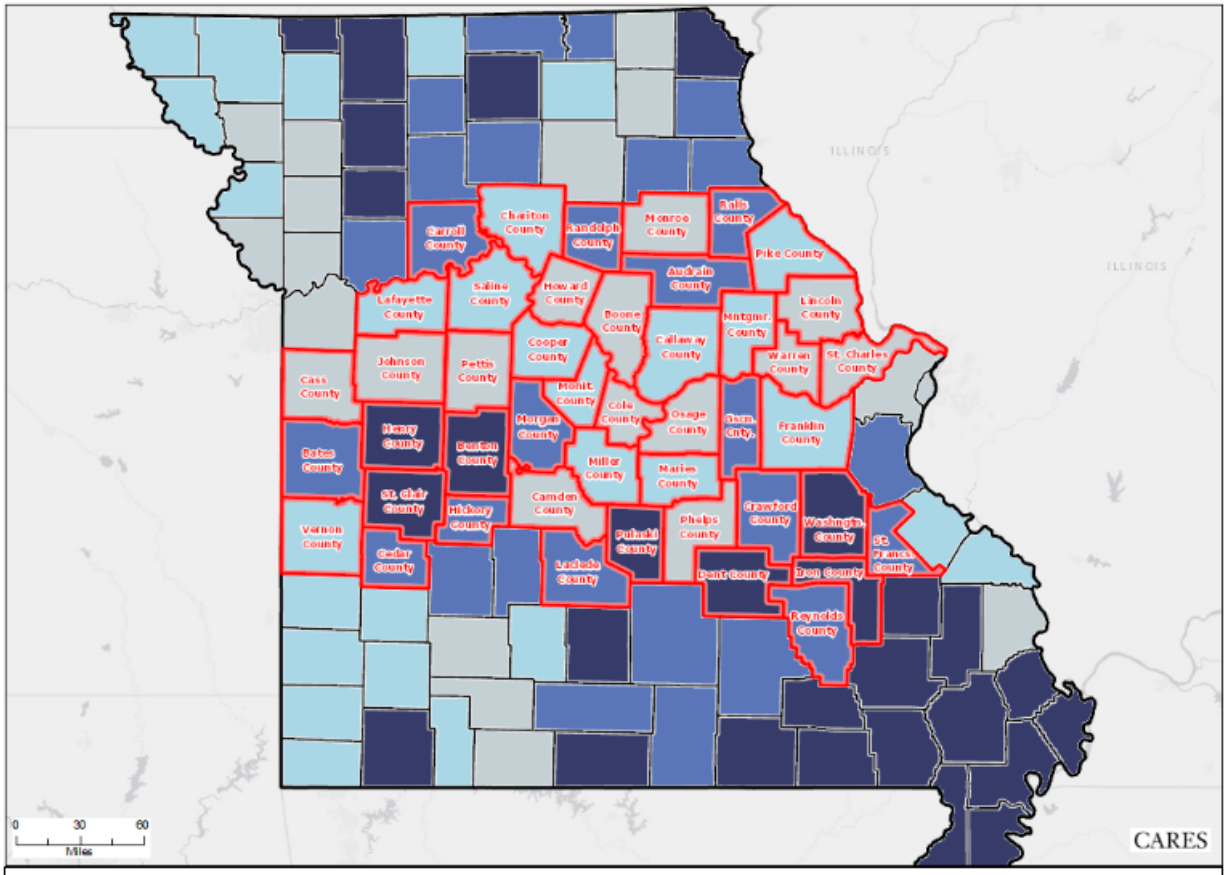
Households with No Vehicle, Percent by County, ACS 2013-17

- Over 8.0%
- 6.1 - 8.0%
- 4.1 - 6.0%
- Under 4.1%
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Poor or Fair Health



Map Legend

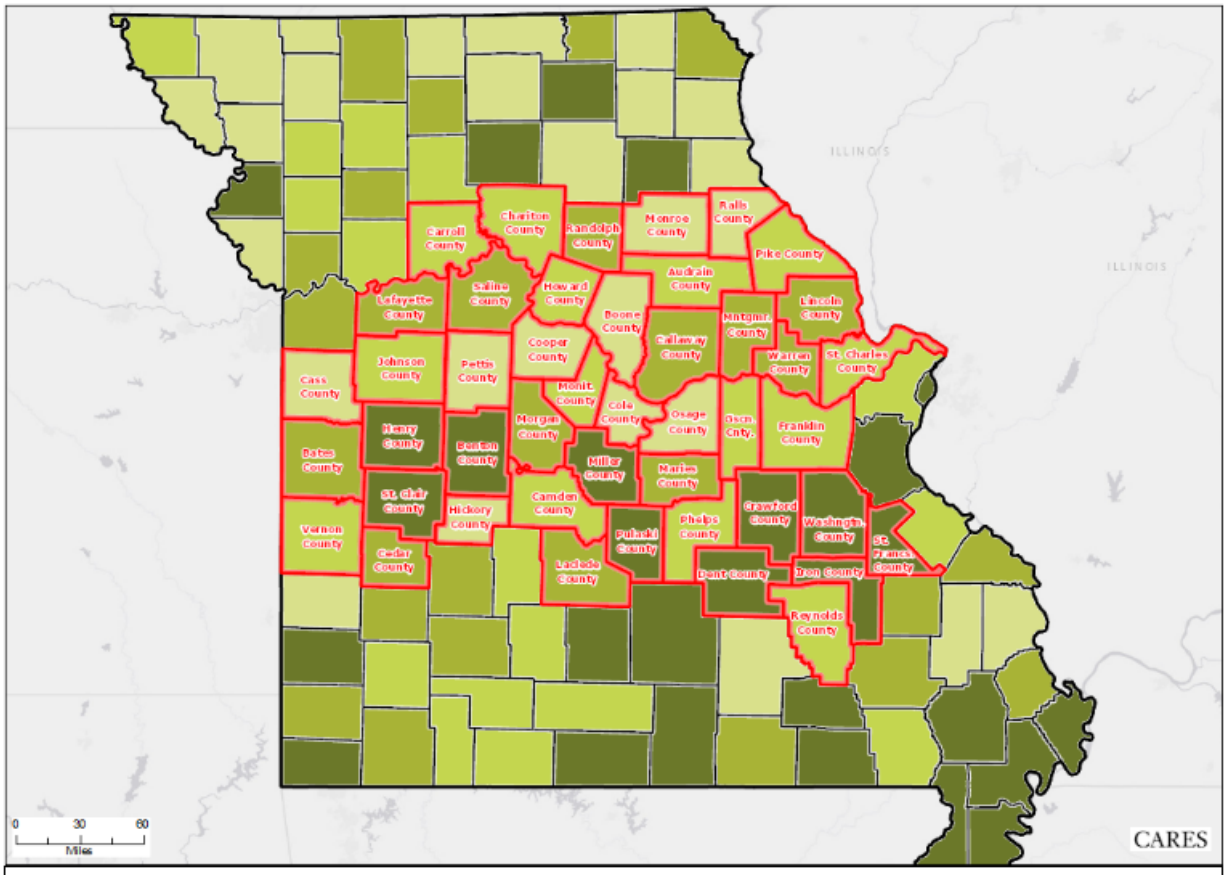
"Fair" or Worse Health, Percent by County, Missouri CLS 2016

- 28.40 - 36.66
- 24.61 - 28.39
- 19.33 - 24.60
- 10.25 - 19.32

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Avg Poor Mental Health Days



Map Legend

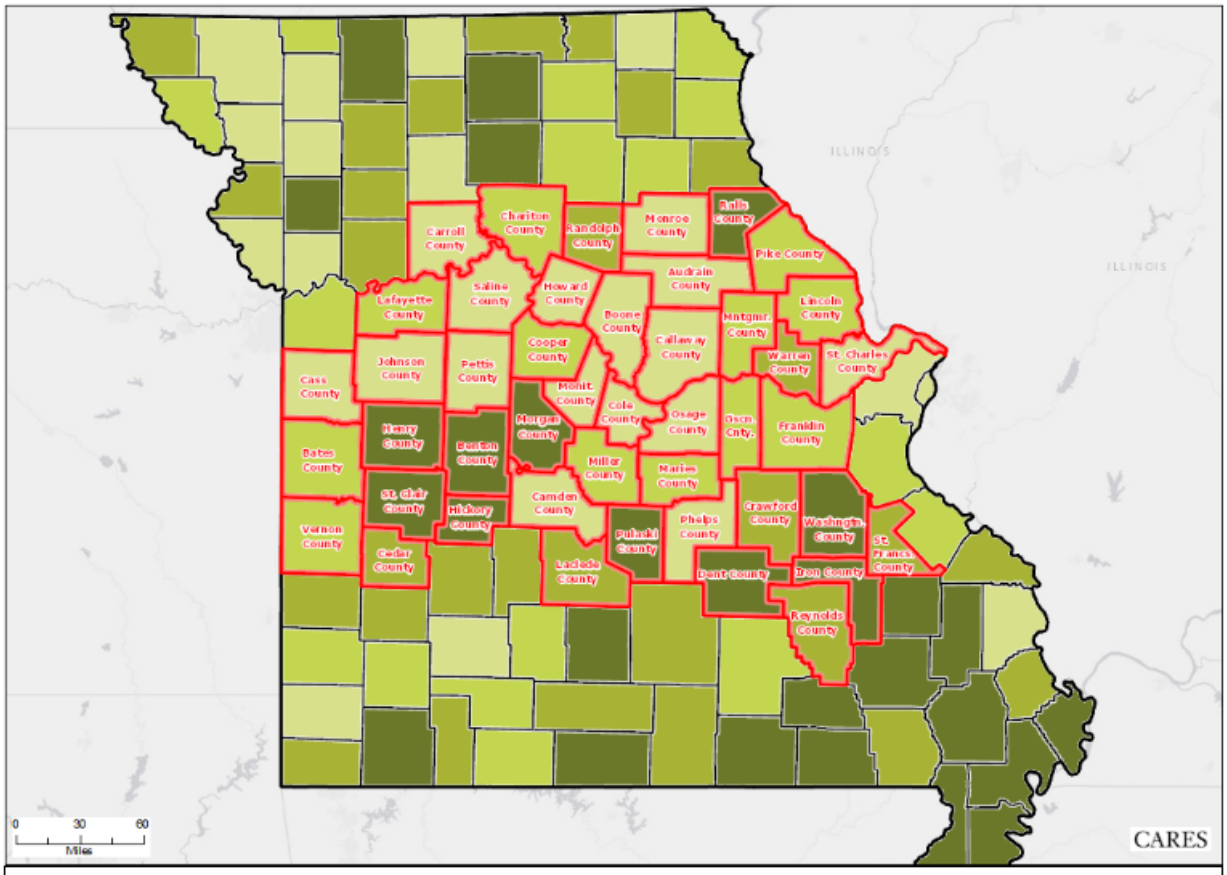
Average Poor Mental Health Days Per Month by County, Missouri CLS 2016

- 4.81 - 6.74
- 4.17 - 4.80
- 3.58 - 4.16
- 2.42 - 3.57

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Avg Poor Physical Health Days



Map Legend

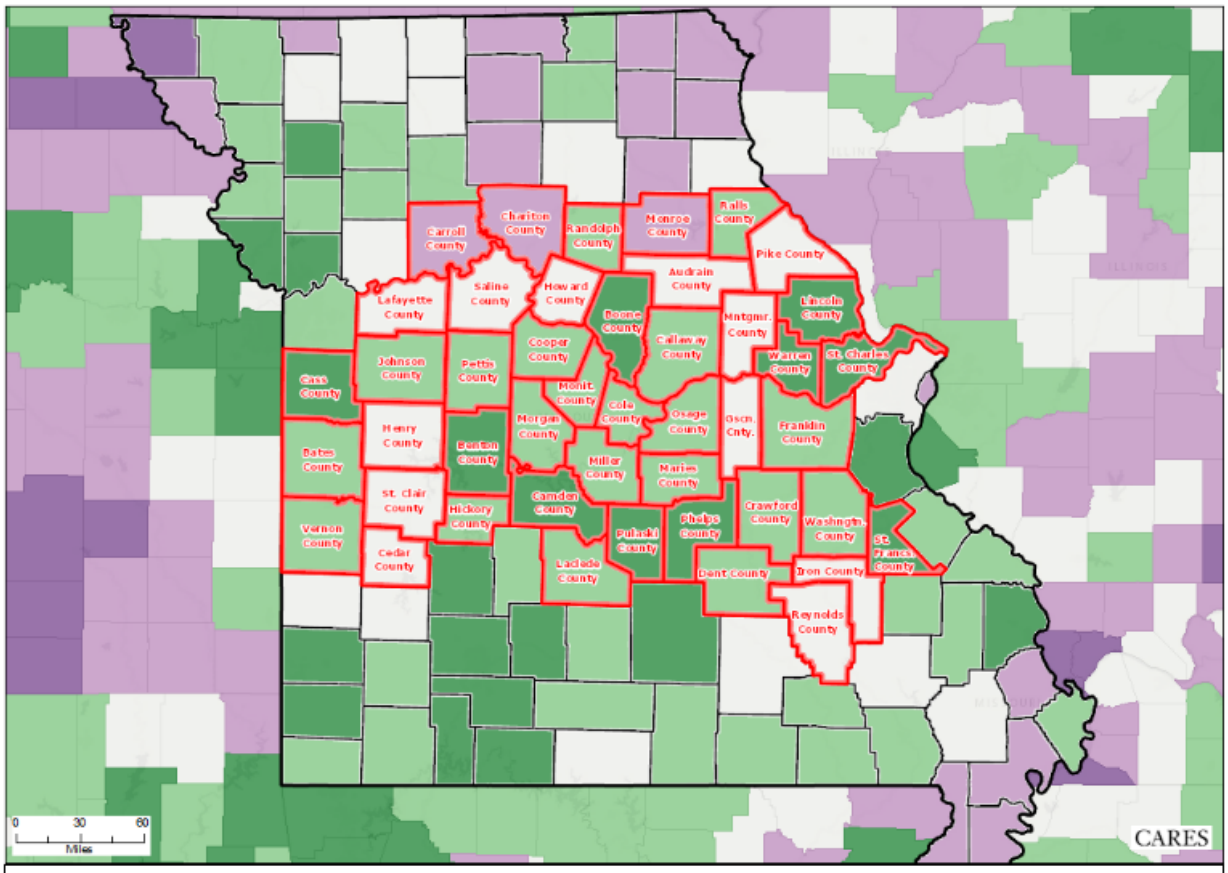
Average Poor Physical Health Days Per Month by County, Missouri CLS 2016

- 5.70 - 7.88
- 5.11 - 5.69
- 4.30 - 5.10
- 1.50 - 4.29

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Population Change



Map Legend

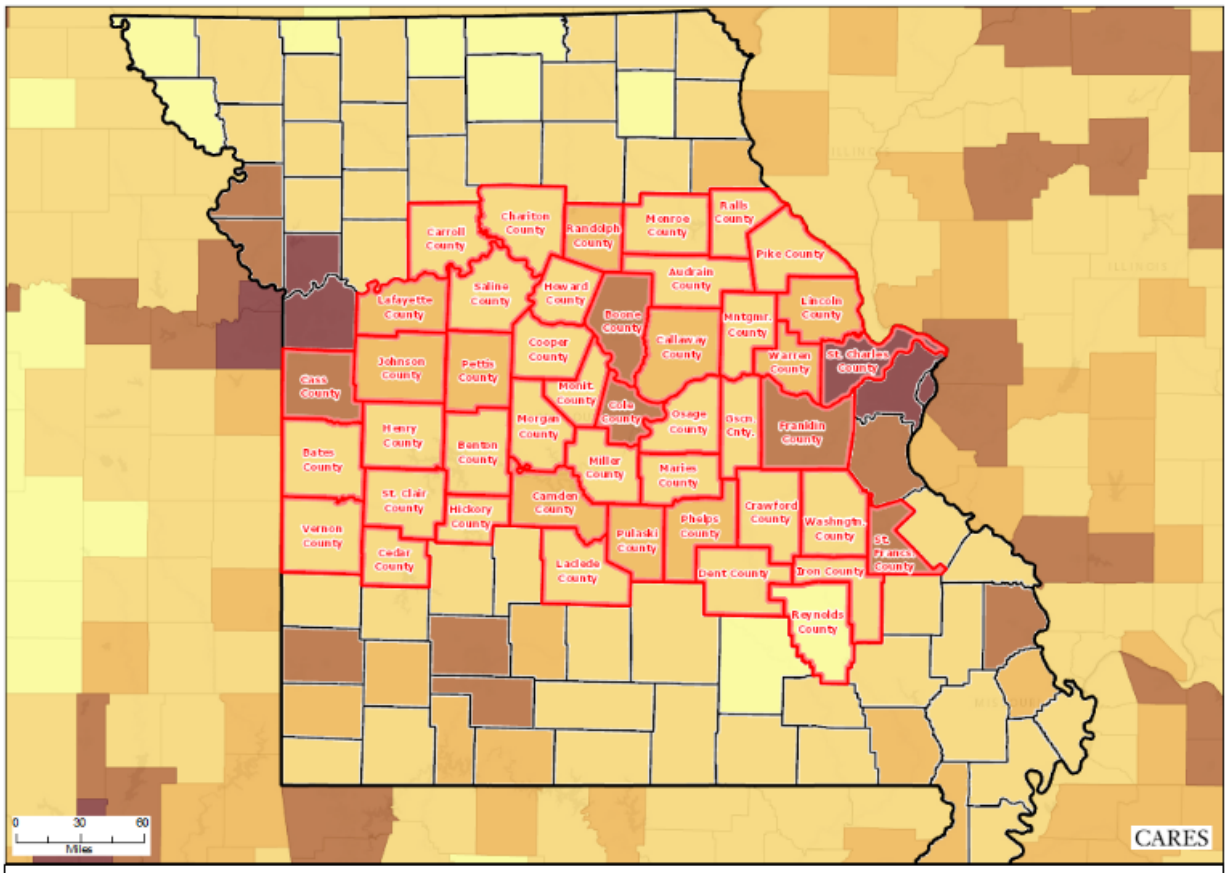
Population Change, Percent by County, US Census 2000 - 2010

- Over 10.0% Increase (+)
- 2.0 - 10.0% Increase (+)
- Less Than 2.0% Change (+/-)
- 2.0 - 10.0% Decrease (-)
- Over 10.0% Decrease (-)
- No Population or No Data

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Population Density: Compass Counties



Map Legend

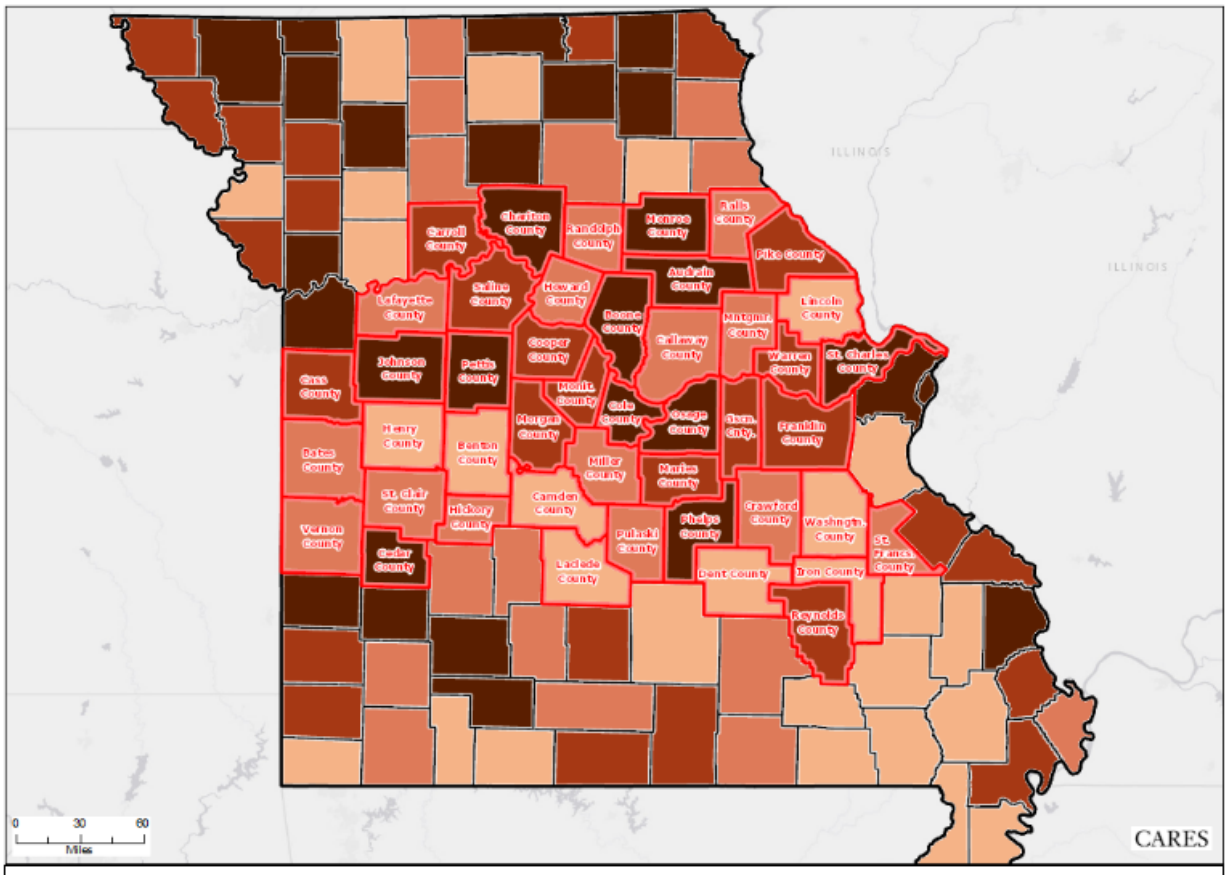
Population, Density (Persons per Sq Mile) by County, ACS 2013-17

- Over 500
- 101 - 500
- 51 - 100
- 11 - 50
- Under 11
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Smoking



Map Legend

Current Smoker, Percent by County, Missouri CLS 2016

- 28.91 - 35.26
- 24.95 - 28.90
- 20.92 - 24.94
- 11.29 - 20.91

Former Smoker, Percent by County, Missouri CLS 2016

- 27.23 - 40.24
- 24.86 - 27.22
- 22.69 - 24.85
- 15.93 - 22.68

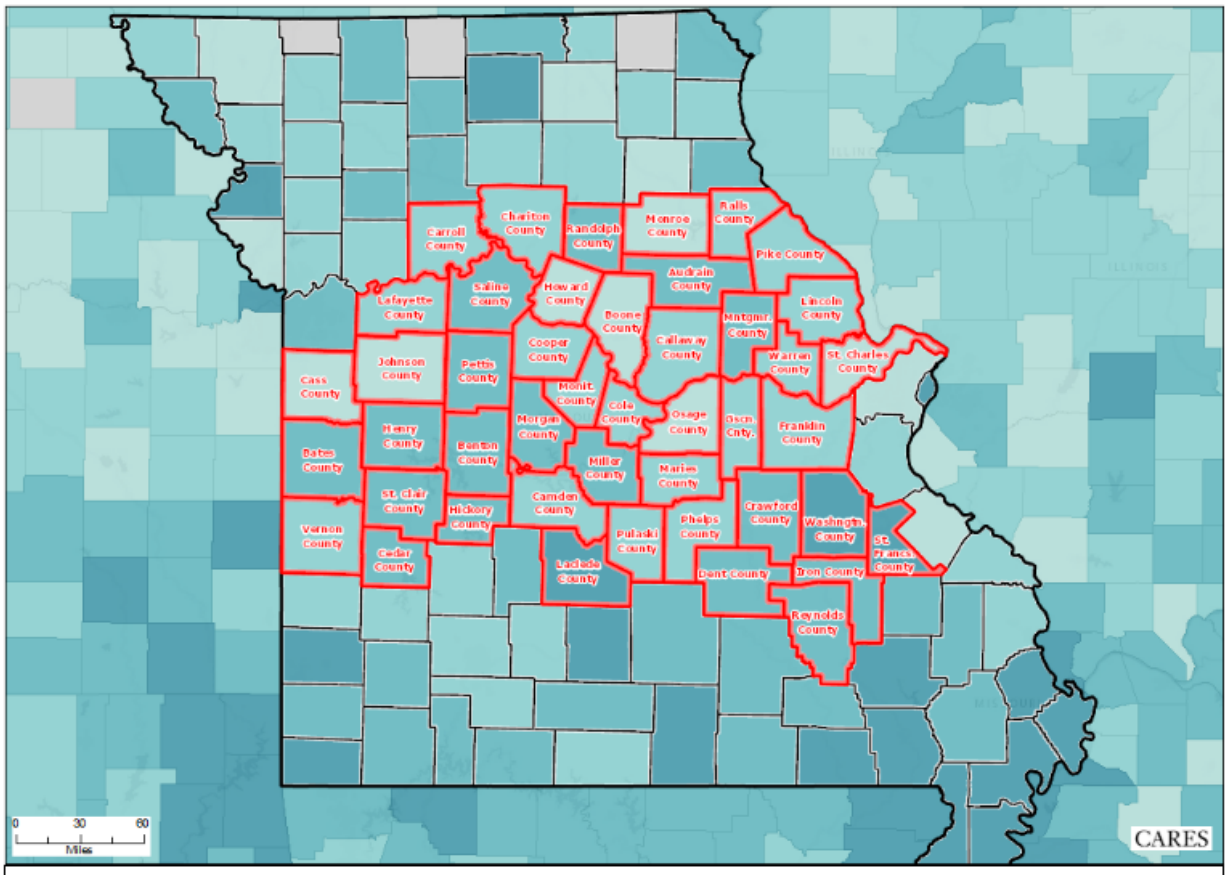
Never Smoked, Percent by County, Missouri CLS 2016

- 54.94 - 67.90
- 49.82 - 54.93
- 45.99 - 49.81
- 36.75 - 45.98

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Teen Births



Map Legend

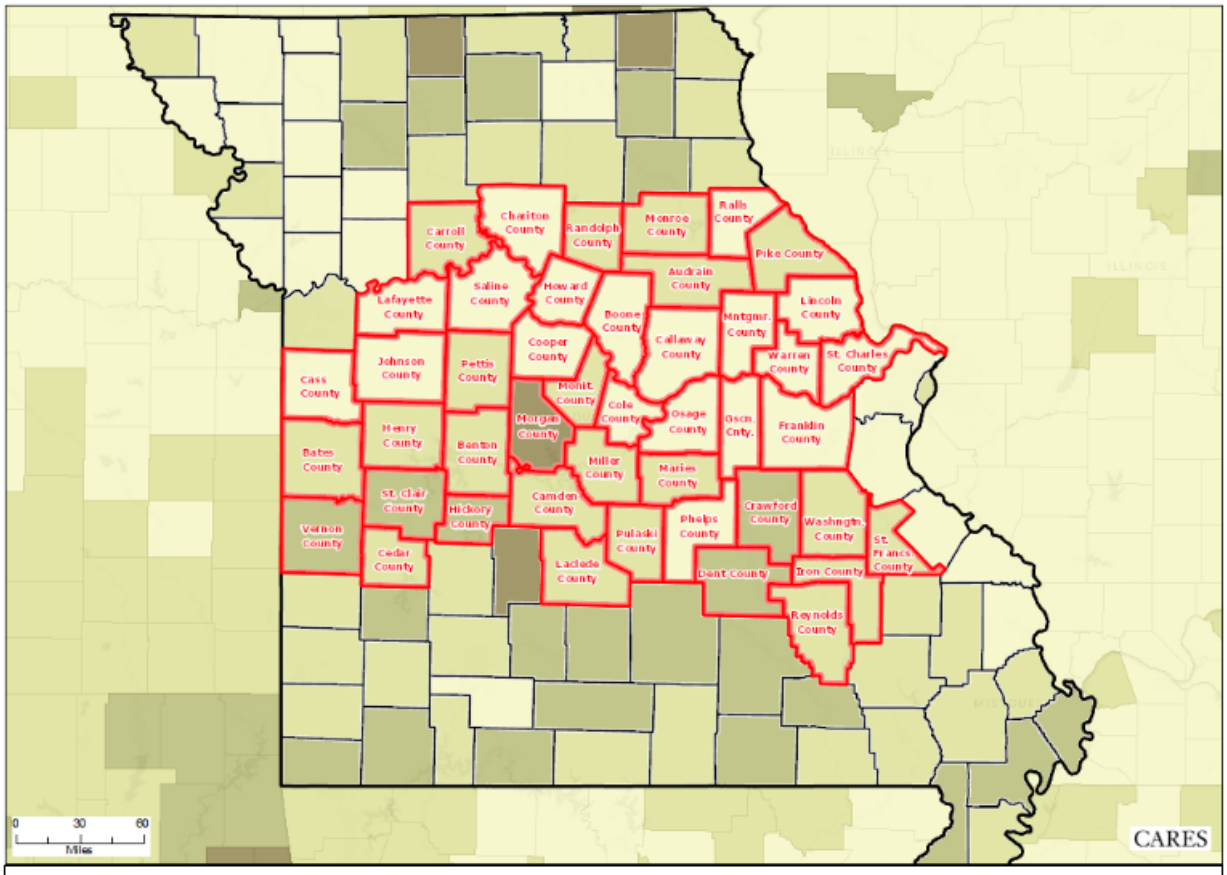
Births to Females Age 15-19, Rate (Per 1,000 Pop.) by County, NVSS 2006-12

- Over 60.0
- 45.1 - 60.0
- 30.1 - 45.0
- Under 30.1
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Uninsured Population



Map Legend

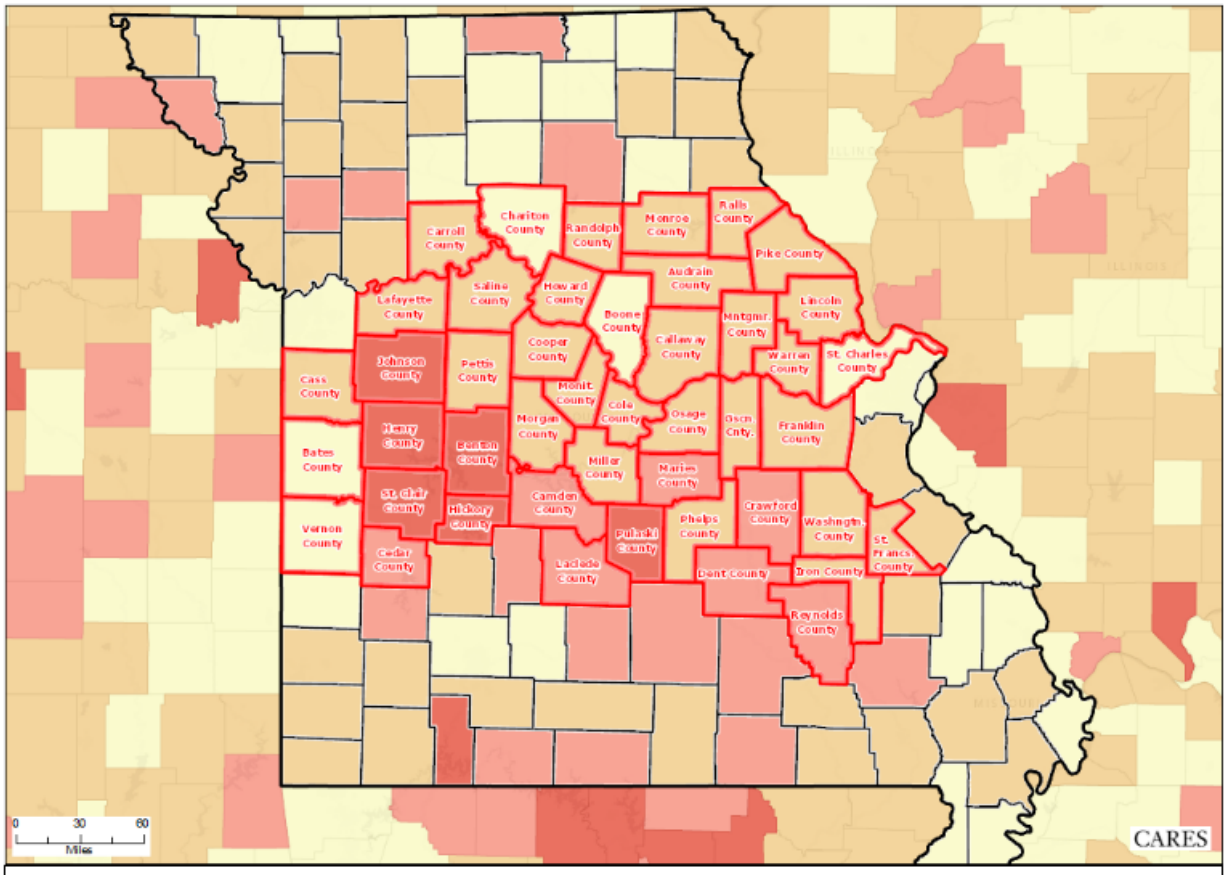
Uninsured Population, Percent by County, ACS 2013-17

- Over 20.0%
- 15.1 - 20.0%
- 10.1 - 15.0%
- Under 10.1%
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Veteran Population



Map Legend

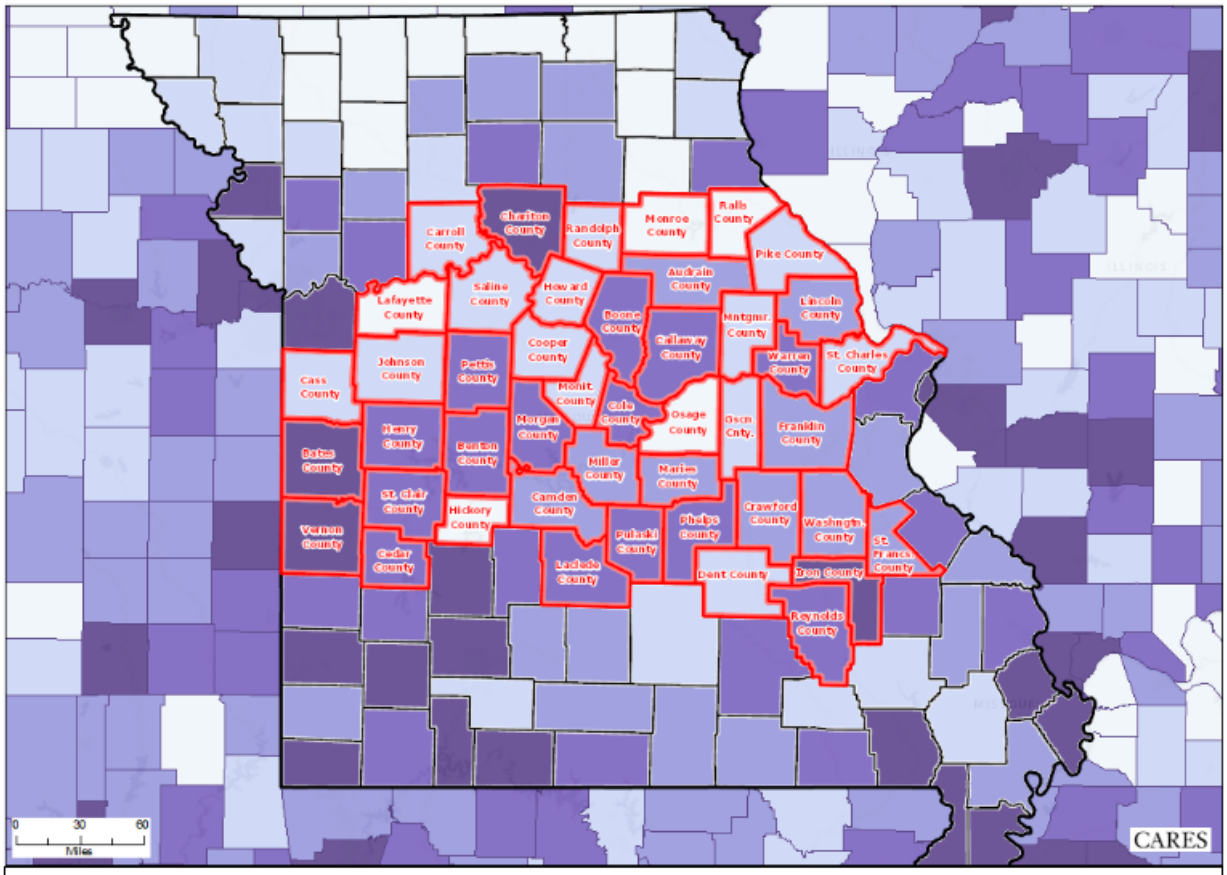
Veterans, Percent of Total Population by County, ACS 2013-17

- Over 13%
- 11.1 - 13.0%
- 9.1 - 11.0%
- Under 9.1%
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019

Violent Crime



Map Legend

Violent Crimes, All, Rate (Per 100,000 Pop.) by County, FBI UCR 2012-14

- Over 380.0
- 260.1 - 380.0
- 180.1 - 260.0
- 100.1 - 180.0
- Under 100.1
- No Data or Data Suppressed

Report Location, County

https://exploremohealth.org/map-builder/, 2/21/2019