MANAGEMENT AND BUDGET

ADULT MENTAL HEALTH

BENEFIT-COST ANALYSIS

RESULTS FIRST

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Results First Adult Mental Health benefit-cost analysis – Executive summary

The 2015 Minnesota Legislature instructed Minnesota Management & Budget to conduct benefit-cost analyses for corrections and human services, using the Pew-MacArthur Results First framework. This framework allows Minnesota to estimate the cost effectiveness of select services using the best national evidence. Under this framework, we do not evaluate the impact of services as currently implemented in Minnesota. Rather, we estimate the benefits Minnesota can expect if our outcomes resemble those found in previous evaluations conducted in Minnesota or elsewhere in the country. Insights generated from the analysis have the potential to inform state and local decision-makers.

This report examines benefits and costs associated with adult mental health services. Minnesota's Department of Human Services (DHS) and county human services agencies administer a range of programs that provide mental health services and promote wellness. These investments also have the opportunity to decrease hospitalizations and increase employment, thereby generating benefits to participants and the state.

Of the seven services analyzed, six have benefits that exceed their costs. Estimated benefits per dollar invested range from $3.90 for mobile crisis response to $0.80 for Wellness Recovery Action Plan. MMB also analyzed one type of clinical treatment, Cognitive Behavioral Therapy (CBT), for three mental health diagnoses (depression, anxiety, PTSD). For this treatment, returns ranged from $66.00 to $30.80 per dollar invested. Most benefits accrue with participants through increased employment.

Previous studies have found that evidence-based services can improve client outcomes. DHS and counties already administer a number of these services, but opportunities exist to deepen their use. For example, differences exist in the availability and use of evidence-based mental health services from county to county. In addition, practitioners need support implementing these services effectively for their specific population to maximize the treatment benefits.

We use a statistical model to estimate benefits from estimated reductions in hospitalizations, increases in employment, and reductions in crime. These outcomes come from existing rigorous evaluations of mental health services. Our reliance on high-quality research means, currently, we are only able to examine a small subset of services offered as part of Minnesota's mental health continuum.

Benefit-cost analysis is a valuable tool for informing decisions about how to deploy scarce public resources, but cost-effectiveness is only one factor to consider when evaluating mental health investments. Equity, innovation, and the well-being of individual clients are a few other key factors.

Figure 1: Summary of benefit-cost analysis

Comparison of estimated benefits and costs for Crisis Response Services

Service	Per participant benefit minus cost	Benefit-cost ratio	Taxpayer benefits	Other societal benefits
Mobile Crisis Response	$1,280	$3.90	$1.20	$2.70

Comparison of estimated benefits and costs for Community Services & Supports

Service	Per participant benefit minus cost	Benefit-cost ratio	Taxpayer benefits	Other societal benefits
Behavioral Health Home Services	$50	$1.40	$0.80	$0.60
Certified Peer Specialist	$1,310	$3.60	$0.50	$3.10
Illness Management Recovery	$370	$1.40	$0.30	$1.10
Individual Placement and Supports	$810	$2.10	$0.30	$1.80
Wellness Recovery Action Plan	($90)	$0.80	$0.10	$0.70

Assumption: Benefits only accrue in the year of treatment for these six services.

Comparison of estimated benefits and costs for Basic Clinical Services

Service	Per participant benefit minus cost	Benefit-cost ratio	Taxpayer benefits	Other societal benefits
Cognitive Behavioral Therapy Adult Anxiety	$36,930	$66.00	$8.80	$57.20
Cognitive Behavioral Therapy PTSD	$16,920	$30.80	$8.30	$22.50
Cognitive Behavioral Therapy Adult Depression	$20,120	$36.40	$5.00	$31.40

Assumption: Benefits continue to accrue throughout the lifetime of the participant.

Source: Minnesota Management and Budget

Minnesota Results First

Background

The 2015 Minnesota Legislature instructed Minnesota Management & Budget to conduct benefit-cost analyses for corrections and human services, using the Pew-MacArthur Results First Initiative framework.[1] This framework allows states to identify the research base for correctional and human services and estimate benefits and costs using the best national evidence. The Results First team at Minnesota Management and Budget (MMB) uses this framework in coordination with other key stakeholders to estimate benefit-cost ratios associated with practices evaluated through rigorous studies conducted in Minnesota and elsewhere. State and local policymakers and practitioners envision using this information to inform their decision-making.

Results First framework

Overview

The Pew-MacArthur Results First Initiative works with states to implement a framework based on research synthesis and benefit-cost modeling originally developed by the Washington State Institute for Public Policy (WSIPP).[2] The approach enables states to identify opportunities for investment that could generate positive outcomes for citizens and achieve substantial long-term savings. Minnesota is one of a growing number of states that are customizing this approach to their state-specific context and using its results to inform policy and budget decisions.

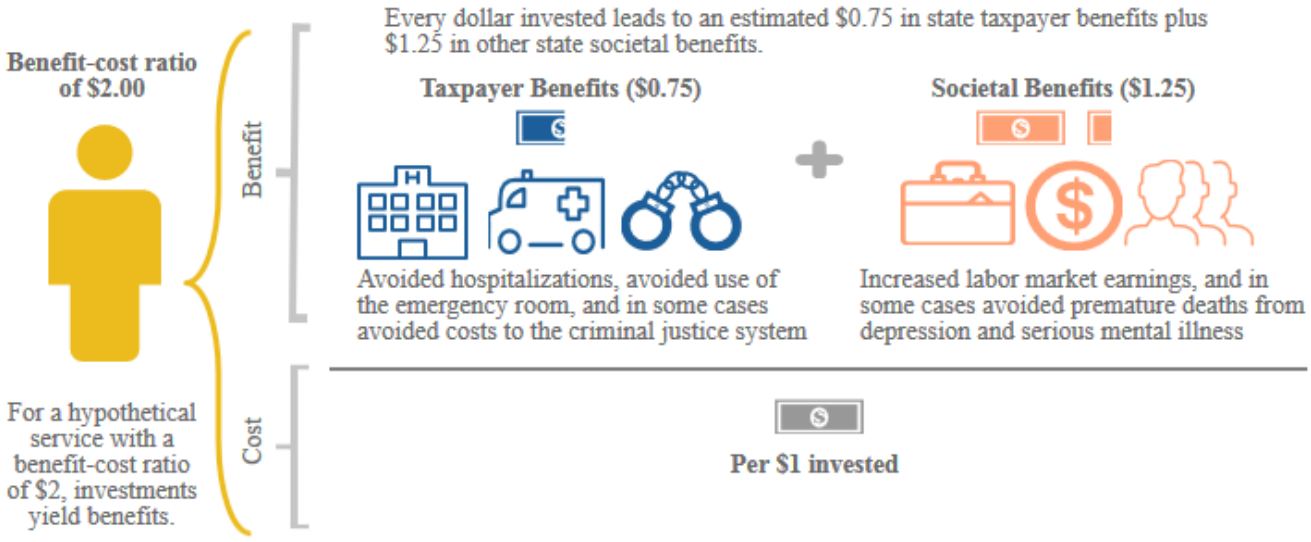
The Results First framework has two major components: the inventory of services and the benefit-cost analysis. The inventory identifies the degree to which there is evidence of effectiveness -- defined as a decrease in hospitalization, increased employment, decreased homelessness, or decreased psychiatric symptoms -- for each of the services implemented in Minnesota.[3] MMB developed an inventory of 33 adult mental health services and conducted in-depth benefit-cost analyses of seven services for which adequate research and fiscal data are available. The benefit-cost analyses estimate the monetary value of a given change in outcomes—including hospitalizations, employment, and crime. A change in these outcomes affects taxpayer expenses, such as health care and criminal justice involvement, and

[1] Laws of Minnesota 2015, chapter 77, article 1, section 13.
[2] WSIPP website: http://www.wsipp.wa.gov/ & Pew-MacArthur Results First Initiative website: http://www.pewtrusts.org/en/projects/pew-macarthur-results-first-initiative
[3] The Results First inventories are an intermediary step to determine which services to include in the final benefit-cost analysis. Each contains information about the service and its associated evidence of effectiveness. The inventories are posted on the Results First website: https://mn.gov/mmb/results-first/inventory-of-services/

participants' labor market earnings and prevalence or severity of symptoms. Per-participant benefits are compared to the per-participant cost of the service.

The benefit-cost ratio means "for every dollar invested in this service, there are X dollars in benefits".

Figure 2: Explanation of a benefit-cost ratio



Assumptions

Each benefit-cost analysis does not directly evaluate service outcomes or effectiveness of services delivered in Minnesota. Rather, it estimates the benefits the state can expect if services have the same impact found in previous evaluations conducted in Minnesota or elsewhere in the country. Confirming the state achieved the outcomes assumed for each service would involve conducting separate impact evaluations. To achieve the estimated benefit, evidence-based services in Minnesota must be implemented effectively.

To supplement the findings, MMB added context and collected data from a sample of Minnesota counties: Dakota, Hennepin, Olmsted, and Otter Tail. This sample includes counties of varying size and proximity to metro areas, but is not necessarily representative of human service agencies throughout the state. We also used data from the Department of Human Services and providers to estimate the cost and use of services. Future analyses may include additional counties.

The adult mental health system is complex and diffuse. Before reading the benefit-cost findings, it is important to understand what influences a person's mental health, what a "continuum of care" is, Minnesota's unique challenges, and who provides mental health services.

Adult mental health in Minnesota

Background

Mental illness has biological, psychological, and social components. Examples of mental illness include anxiety disorder, attention-deficit/hyperactivity disorder (ADHD), depression, disruptive behavior (includes oppositional defiant disorder and conduct disorder), post-traumatic stress disorder (PTSD), and serious mental illness (SMI) which includes major depression, schizophrenia, and bipolar disorder. The current medical model emphasizes biological and chemical dimensions of mental illness, but has recently expanded to a biopsychosocial model that recognizes the role of biological, social and environmental dimensions of mental illness (Governor's Task Force on Mental Health, 2016a; Melchert, 2015).

Different factors influence a person's likelihood of developing a mental illness. Risk factors are characteristics at the biological, psychological, family, community, or cultural level that precede a mental illness and increase the likelihood of negative outcomes. Risk factors range from the individual level (such as genetics and predisposition to addiction) to socioeconomic and environmental levels (such as experiencing poverty and historical trauma). Protective factors reduce a risk factor's impact and decrease the likelihood of negative outcomes. For example, in communities, risk factors include neighborhood poverty and violence, and protective factors include the availability of support networks and after-school activities (SAMHSA, 2015). At any given time, these influences can affect a person's mental health and contribute to the episodic nature of mental illness.

Mental illness is relatively common; approximately 226,000 adults in Minnesota have a serious mental illness (Minnesota Department of Human Services, 2016a). To support these individuals, the Minnesota mental health system consists of a wide set of formal and informal health and social services. Community organizations; outpatient clinics; residential treatment and rehabilitation centers; psychiatric hospitals; psychiatric units in general hospitals; mental health services in schools, jails, and prisons; primary care providers; and human and social service providers are examples of organizations and settings that provide mental health care (Governor's Task Force on Mental Health, 2016a).

The state mental health system has an assortment of services that support individuals with a mental illness, but there are inconsistencies in care, gaps in service, and silos of information. Established in April 2016, The Governor's Task Force on Mental Health worked on recommendations to improve Minnesota's mental health system. Their first recommendation is to create a comprehensive mental health continuum of care (Governor's Task Force on Mental Health, 2016a). A "continuum" is necessary

to address client conditions ranging from wellness, to mental illness, to serious mental illness. There are six non-sequential categories of activities and services in the mental health system, surrounding the individual, family and community at the center.[4]

Figure 3: Mental health continuum of care

Health promotion and illness prevention are population-based activities. Health promotion defines mental health and its importance, identifies risk factors, and builds protective factors to promote positive mental health. Prevention includes supports and services to deter mental illness caused by risk factors (e.g., poor nutrition, unsafe housing and neighborhoods, experiencing trauma, economic insecurity), and help systems better support individuals. There are individual- and family-level activities and services around mental health promotion and prevention.

Early intervention services and activities refer to finding and addressing mental health illness in its earliest stage. Mental health problems can occur regardless of age, however, early detection has the potential to reduce the need for more intensive types of treatment and decrease costs over time. Example services include First Episode Psychosis program and Home Visiting.

Basic clinical services include diagnosis and therapy provided by public and private practices, community mental health centers and outpatient clinics, residential treatment and rehabilitation centers, psychiatric hospitals, psychiatric units at general hospitals, schools, community centers, spiritual centers, jails and prisons, nonprofits, and community organizations.

Community services & supports are services for adults with mental health illness living in the community or recovering from higher levels of treatment. Many of these services are designed to lead to positive client outcomes like reduced hospitalizations, manageable symptoms, decreased homelessness, increased well-being, and improved employment outcomes, among others. Community services can also include recovery-focused treatments that continue to provide services to a person in a community-based

[4] The Task Force's continuum of care includes additional services and supports to the mental health system: substance use disorder treatment, public health, primary care, housing, employment, education, transportation, criminal justice, and other social services (Governor's Task Force on Mental Health, 2016a). This report highlights the six categories and activities of the mental health system.

setting after more intensive treatment. Recovery services can include outpatient treatment, case management, and Assertive Community Treatment (ACT) for individuals with serious mental illnesses.

Crisis response services assist a person experiencing an acute mental health emergency. In Minnesota, each county has a 24-hour mental health crisis phone line staffed by trained workers to assist callers, make referrals, and contact emergency services.[5] Counties also have mobile crisis response teams. Two or more licensed mental health professionals or practitioners meet the individual at the crisis scene to cope with immediate stressors, identify available resources and supports, and make referrals if needed.

Inpatient & residential treatment include hospitalization, partial hospitalization, adult day treatment, residential treatment, and long-term mental health services. When individuals have a mental health crisis or their symptoms become too severe and interfere with daily living, more intensive services are necessary. A shortage in inpatient psychiatric beds has received wide attention in recent years.

This report highlights the mental health continuum for the importance of having resources available at each stage. Moreover, preventative and early intervention services can help decrease costs of more expensive interventions later in the continuum (Cullberg & et al., 2006).

Mental health system governance

Minnesota implements a state-directed, county-administered public mental health system. The Department of Human Services (DHS) is the state mental health authority. County boards of commissioners, American Indian tribal governments, and multi-county regions are the local mental health authorities.

State mental health authority

As the state mental health authority, the Department of Human Services (DHS) defines and disseminates statewide policy for mental health service delivery, coordinates statewide goals, and develops new methods of delivery based on best practices. DHS is also responsible for monitoring and evaluating local service delivery systems, allocating funds, and federal reporting. In 1987, the legislature passed the Minnesota Comprehensive Mental Health Act, which aimed to “create a unified, accountable, comprehensive adult mental health service system that recognizes the rights of adults with mental illness; reduces chronicity of mental illness; eliminates abuse; provides services; and provides a quality of service that is effective, efficient, appropriate, and consistent with contemporary professional

[5] Some lines serve more than one county.

standards".[6] The Comprehensive Mental Health Act establishes counties and some tribes as local mental health authorities. Each county board of commissioners "must develop fully each of the treatment services and management activities".[7]

With the Comprehensive Mental Health Act, the state legislature set goals and priorities for adult mental health services. DHS sets rates that providers can bill for publicly funded services like Medical Assistance (Minnesota's Medicaid program) when authorized by law. DHS also distributes grants to fund community services and supports. Authorizing treatments, altering rates, and targeting grants strongly influence the service offerings throughout the state.

Local mental health authorities

The state defines the types of publicly funded mental services each county must implement, but each county's board of commissioners is responsible for day-to-day administration: system planning, implementing and coordinating programs among providers, coordinating client care through case management, allocating state and local funds, and reporting data and information to DHS (Minnesota Department of Human Services, 2014).[8] Counties contract with local providers or managed care organizations to deliver mental health services, funded with federal, state, and local tax dollars. Many entities provide services in Minnesota including private agencies, individual providers (for-profit and non-profit), counties, community mental health centers, school districts, and the Veterans' Administration. Providers must meet service requirements and be enrolled as a Minnesota Health Care Program (MHCP) mental health provider to be reimbursed by the county (Minnesota Department of Human Services, 2014).

In 1999, counties organized themselves into seventeen regional groups called Adult Mental Health Initiatives (AMHI)[9]. The AMHI regions allow smaller, sparsely populated counties to collaborate and implement more services than they could have done independently. The AMHI regions include six federally-recognized American Indian Tribal Governments: Lower Sioux Indian Community, Prairie Island Indian Community, Red Lake Band of Chippewa Indians, Shakopee Mdewakanton Sioux

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[6] Laws of Minnesota 1987, chapter 403-H.F.No. 243
[7] Minnesota Statutes 2016, section 245.465. Duties of a County Board.
[8] The Act identifies ten services counties must develop, within the limits of legislative appropriations and be available to individuals in each county: Education and preventive services, screening, emergency mental health services including a 24-hour, crisis telephone line, outpatient services, employment support services and programs, community support and day treatment services, residential treatment services, acute care hospital inpatient services, and case management services.
[9] Minnesota Statutes 2016, section 245.466. Pilot Projects; Adult Mental Health Services

(Dakota) Community, Upper Sioux Community, and The Minnesota Chippewa tribe. Some tribes are included with counties in AMHI regions while others are independent. See Appendix C for a map of all AMHI regions.

Adult mental health challenges in Minnesota

The state-directed, county-administered model helped Minnesota develop community-based mental health treatment and services, but with changes in de-institutionalization since the 1980s, health care reform, and a focus on person-centered care, the system has many weaknesses and ambiguities (Governor's Task Force on Mental Health, 2016a). The statewide system is complex with multiple policy-setting agencies, blended funding streams, overlapping goals, and significant variation in availability and access to mental health services (Wilder Research, 2015; Office of the Legislative Auditor, 2016; Community Supports Administration, 2015; Governor's Task Force on Mental Health, 2016a).

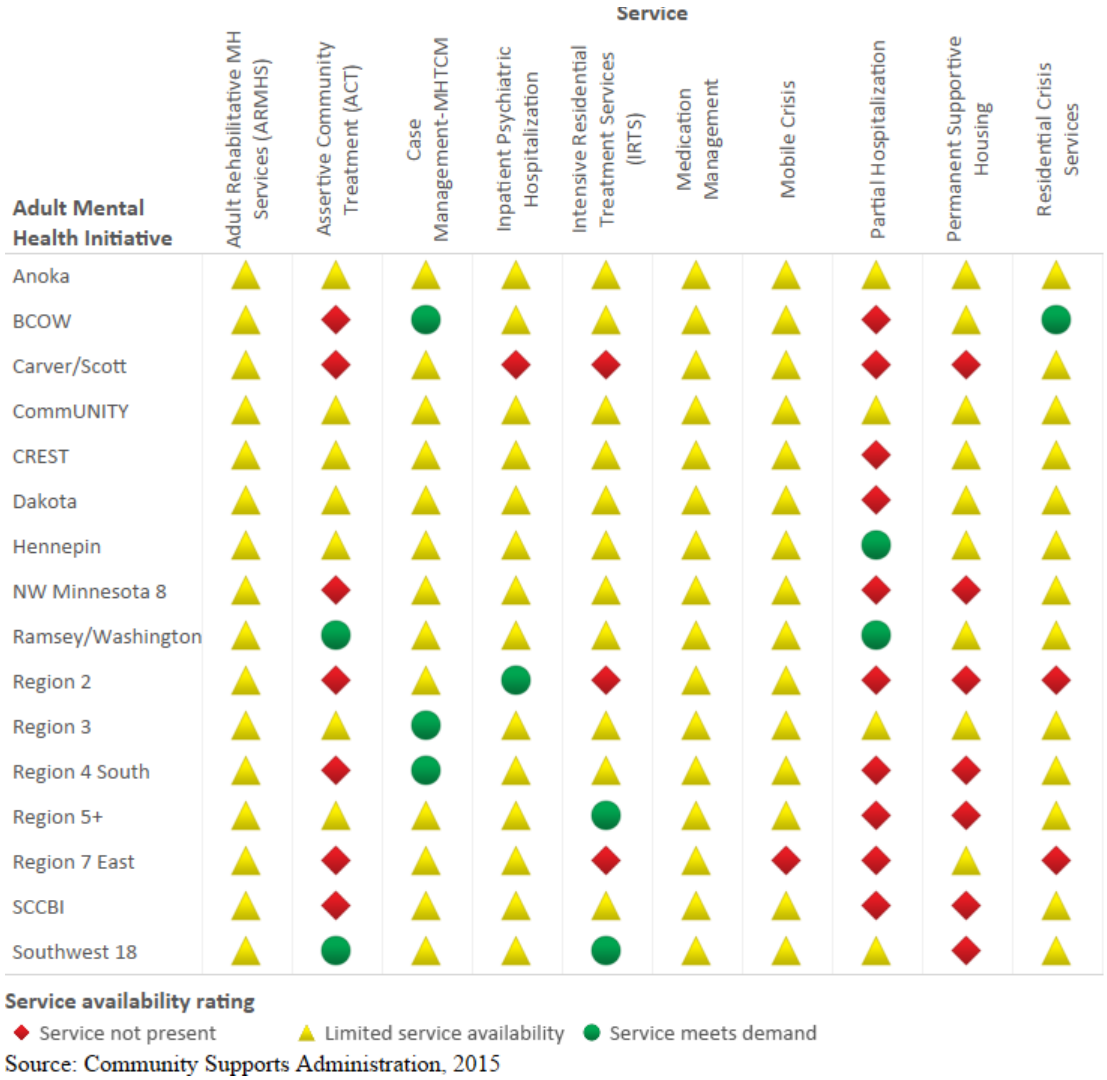
A 2015 Department of Human Services Gap Analysis study examined service availability to adults with mental health issues. Findings indicated that across the state, most services fall short of demand, and lead agencies and service providers identified several core gaps: inpatient psychiatric hospitalization, psychiatric prescribers (psychiatrists, nurse practitioners, and clinical nurse specialists), permanent supportive housing, and medication management for psychotropic drugs (Wilder Research, 2015).[10] Adults with mental illness commonly reported they needed help with housing (21%), personal support/companion services (19%), and supported employment or help finding a job (19%).[11]

[10] Lead agencies included 74 individual counties, four consortiums of counties, and one tribe. Service providers included 71 providers offering services to adults with mental health issues. Rated services included: outpatient services, mental health targeted case management, psychotropic medications, adult day treatment, Partial Hospitalization Program, residential treatment services, Evidence-Based Practices, crisis services, inpatient hospitalization psychiatric care, physician services, support services, treatment services for special populations, adult rehabilitative services, and home and community-based services (HCBS).

[11] Wilder Research conducted online and telephone surveys with adults with mental health conditions (116) and their caregivers (69).

The Mental Health division within the Department of Human Services (DHS) came to the same conclusion that mental health services do not meet demand. Looking at ten mental health services in the community, the Community Supports Administration rated their availability based on the number of service providers in each AMHI region in the year 2014. Most had a "limited service availability" or "no provider is located in this area" rating. According to the report, in 2014, no region met demand in more than two out of the ten services studied (Figure 4). Four of these services in the Community Supports Administration report are identified as "proven effective" in the Results First inventory, and two are rated as promising (see appendix A).

Figure 4: Adult mental health service availability in 2014



Source: Community Supports Administration, 2015

Effective services can produce important outcomes for individuals with mental illnesses, which have the potential to produce cost savings. For example, mobile crisis services, at the time of the Community Supports Administration report, did not meet demand in any region, and was not present in one.

Previous research suggests this service decreases health care costs associated with hospitalization and decreases criminal justice system costs when the person avoids going to jail during a mental health crisis.[12] If this service expanded, more individuals could experience the advantages of having a mobile crisis response team, and there is potential cost savings for the county and state.[13] Recent investments have filled some of these gaps, though many remain.

A mental health workforce shortage influences these service gaps in Minnesota. In the state, 70 of the 87 counties are designated shortage areas for mental health providers.[14] The shortage of psychiatrists in Minnesota has been identified as the most critical problem facing mental health professionals (HealthForce Minnesota, 2015; Wilder Research, 2015). The legislature identified this problem and enacted a bill requiring Minnesota State Colleges and Universities to develop a state plan including ways to increase the number of mental health professionals, ensure appropriate training and coursework, and create a more culturally diverse mental health workforce.[15] Legislation in 2015 implemented several recommendations from the state plan.[16]

Obstacles to increasing the mental health workforce are particularly pronounced for rural parts of the state and for diverse communities. For example two-thirds of psychiatrists in Minnesota are located in urban areas like the Twin Cities, Rochester, Duluth, St. Cloud, and Moorhead and 88 percent of Minnesota psychiatrists self-identify as White (Office of Rural Health and Primary Care, 2013).

Even if mental health service availability improved, barriers to accessing these services would still exist. In rural communities distance and transportation become a barrier to care (Wilder Research, 2015). Significant copayments and lengthy wait times also deter individuals from accessing care. A lack of public understanding and stigma associated with mental health may also prevent individuals from seeking treatment. In addition to the above barriers to access mental health services, the Minnesota Department of Health (2014) found that certain Minnesota communities, including people of color,

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[12] WSIPP meta-analysis findings for mobile crisis response: http://www.wsipp.wa.gov/BenefitCost/Program/289
[13] The Community Supports Administration has not yet updated service availability data since additional mental health funding in 2015.
[14] The Health Resources & Services Administration designates Health Professional Shortage Areas (HPSAs) for mental health providers by geographic area, population, or faciliites that are federally qualified health centers or prisons. HPSAs are based on a psychiatrist to population ratio of 1:30,000.
[15] Minnesota Bills 2013, SF 1236 Sec. 28. Mental Health Issues Summit
[16] Recommendations funded in 2015 legislation: Increased funding for the foreign-trained health care professionals grant program, the MERC (funds medical education) program, primary care residency programs, and an international medical graduate assistance program. Expanded peer specialists to include case manager associates, expanded the rural loan forgiveness program to include mental health professionals, and created an emeritus license for social workers.

refugees, incarcerated individuals, and individuals identifying with the lesbian, gay, transgender, bisexual, and queer (LGTBQ) community, experience disparities in mental health services and outcomes.

While these challenges are acute, the legislature, DHS, counties, and providers have taken recent steps to close gaps in the mental health continuum.

Recent funding and ongoing efforts

During the 2015 legislative session, lawmakers allocated more than $46 million in new mental health funding for the 2016-17 biennium. The funding aimed to increase capacity of community supports and services, and move more services to private providers (Minnesota Hospital Association, 2015). Many evidence-based services received increased funding: Assertive Community Treatment, Supportive Housing, Individual Placement and Supports (IPS), Mobile Crisis Services, and First Episode Psychosis Program. In addition to increased funding for existing services, the legislation funded Behavioral Health Home services, which began in July 2016.

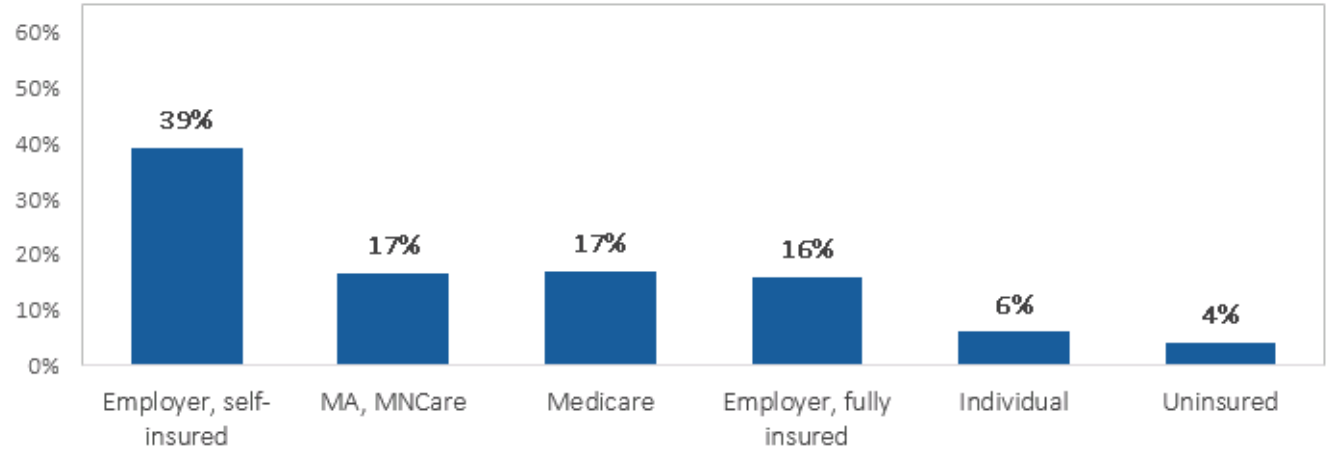
The investments in community supports and services will take time to implement, and even with the additional investments made in 2015, gaps still exist in the continuum of services. See Appendix D for 2015 legislative highlights.

Adult mental health funding

Federal, state, county, and private entities make funding decisions for mental health services. This complex structure creates a difficult process to organize across sectors, and implement system-wide priorities. Understanding these funding sources can identify policy levers to expand evidence-based services and close service gaps in the continuum.

Federal health care reforms mandated health care insurance and expanded Medical Assistance eligibility. Today, 96 percent of Minnesotans have health insurance (Minnesota Health Care Plans, 2016a). For general health care coverage, most Minnesotans use group health insurance (employer self-insured, employer-fully insured). In 2015, 34 percent of Minnesotans had health insurance coverage from public sources (Medicare, Medical Assistance, MinnesotaCare). Individuals with mental health illnesses tend to use public insurance plans like Medical Assistance and MinnesotaCare to cover mental health services and treatments (Rowan, McAlpine, & Blewett, 2013).

Figure 5: Sources of health insurance coverage, 2015



Source: MDH Health Economics Program and University of Minnesota School of Public Health, Minnesota Health Access Surveys, Minnesota Health Care Plans.

Minnesota health care plans

Minnesotans with limited income, a disability, and/or more than 65 years of age may be eligible for public health insurance. Medical Assistance (MA) and MinnesotaCare are two public health insurance options. These programs often offer better mental health coverage than private health insurance plans (NAMI Minnesota, 2014). In 2015, 155,723 adults received mental health services through a Minnesota Health Care Plan (Minnesota Department of Human Services, 2016a).

Medical Assistance (MA) is the Minnesota's Medicaid program, which provides coverage for health care services for low-income Minnesotans. DHS is the state Medicaid agency, and it collaborates with counties to administer the program. The state and federal government jointly finance MA. The state generally receives 50 percent federal matching funds for the cost of MA services, the general fund pays the remaining 50 percent, a county share covers specified services (House Research Department, 2015).[17] MinnesotaCare is a premium-based public health insurance program for low-income residents who do not have access to Medicare, MA, or health insurance through an employer. Eligibility is based on income, but at slightly higher levels than MA. Members pay a monthly premium based on a sliding-fee scale.[18]

[17] Between 2014 and 2016, the federal government matches 100% of newly eligible persons under the ACA Medical Assistance expansion (adults with no children and incomes up to 133% FPL) under the Affordable Care Act Medicaid expansion. This will phase down to 90% in 2020 and continue. https://www.medicaid.gov/affordablecareact/provisions/financing.html

[18] DHS Insurance affordability programs (IAPs) income and asset guidelines are found in this document: https://edocs.dhs.state.mn.us/lfserver/Public/DHS-3461A-ENG

Private health care organizations also provide insurance for Minnesotans. Each has its own service areas, enrollment, products, and services. Minnesota plans include Blue Cross Blue Shield/Blue Plus of Minnesota, HealthPartners, Medica, Metropolitan Health Plan, PreferredOne, Sanford Health Plan of Minnesota, and UCare. These plans cover more than four million people through public and private coverage (Minnesota Council of Health Care Plans, 2016a). Minnesota agencies share oversight of these plans. Minnesota Department of Health oversees quality standards; the Department of Commerce approves health insurance policies, rates, and conducts audits; the Department of Human Services sets rules and regulations for the use of public health care plans. Federal and state legislators have the ability to require the coverage of treatment and services.

The amount spent by these insurers on inpatient and outpatient chemical dependency and mental health services increased from 2013 to 2014 by 7.3 percent (Minnesota Council of Health Care Plans, 2016c).

Mental health state grants

State and federal funding also support grants for community support services for adults with mental illness and other activities not covered by Medical Assistance. Services funded by Community Support Program (CSP) and Adult Mental Health Initiative (AMHI) grants include, but are not limited to, Mental Health Targeted Case Management (MHTCM), Adult Rehabilitative Mental Health Services (ARMHS), adult outpatient medication management, and Assertive Community Treatment (ACT) services not included in other health coverage. There are three housing-focused grants to target homeless individuals with serious mental illness, cover housing costs while an individual receives facility-based treatment, and develop permanent supportive housing. There are also grants to support crisis response services and workforce development. DHS spending for the Adult Mental Health Grants activity in FY2015 was approximately $75 million (Minnesota Department of Human Services, 2016a).[19] Additional state grants also support and promote adult mental health services.

These grants supplement individual healthcare coverage and other funding sources to help individuals receive treatment and live independently in their community. Individuals served may have public or private health care insurance. Often counties use these grants as a bridge for individuals who are eligible for public coverage, but who are not yet enrolled.

[19] Total expenditures for FY 2015 include Compulsive Gambling grants, which, effective July 1, 2017, are administered under the CD Treatment Supports Grants Budget Activity.

Other funding sources

Private health insurance plans offer mental health coverage. Minnesotans can obtain private group health insurance through an employer or an association or individual coverage through the insurance marketplace or directly with an insurer. Coverage varies from plan to plan, but all are legally required to provide the same level of benefits for mental health treatment as other types of medical or surgical care.[20]

County funding

Counties play a vital role in the provision and funding of mental health services. They are the local mental health authority in most cases and coordinate programs among providers, organize client care through case management, allocate state and local funds, and report data and information to the state. Counties also provide direct funding for service provision and match state and federal dollars for some Medical Assistance services. For example, counties pay 50 percent of the reimbursement for some types of Medical Assistance beneficiaries receiving case management. Direct funding from counties pays for employees and purchases services for uninsured individuals beyond what is possible with state grants alone. In 2015, counties expended an estimated $167 million in such funding. (Minnesota Department of Human Services, 2015).

The counties' role as local mental health authority is part of the community-based mental health services model. This model allows people to access mental health services in their communities versus centralized institutions. De-institutionalization improved person-centered and recovery-oriented care, but it also has many complexities for service providers (Governor's Task Force on Mental Health, 2016a). The state-local authority partnership obscures the responsibilities and accountability of services, funding, and quality measurement. Adding to this complexity, the benefits from investments in mental health services by one group may accumulate to other parties. For example, the benefits from county investments in care coordination may accumulate to health care providers.

Direct care and treatment

The Department of Human Services also provides direct services when individuals have a mental health crisis and those symptoms interfere with daily activities or require intensive services. Specialized inpatient, residential, and related treatment supports are available for people with mental illness. Several

[20] The Mental Health Parity and Addiction Equity Act (MHPAEA) of 2008 requires health insurance companies and group plans to provide the same level of benefits for mental health treatment as other types of medical or surgical care.

mental health facilities throughout the state provide care to individuals who have been civilly committed or who require long-term intensive treatment.

The Anoka Metro Regional Treatment Center (AMRTC) serves people with multiple and complex conditions, people with mental illness who face a criminal trial, and people with high levels of behavioral issues. Community Behavioral Health Hospitals (CBHHs), located in seven Minnesota cities, provide short-term inpatient psychiatric care. Minnesota Specialty Health System includes four locations focusing on different treatments: Intensive Residential Treatment Services (IRTS), Illness Management and Recovery (IMR), Integrated Dual Disorder Treatment (IDDT), Family Psycho-education, and community integration (Minnesota Department of Human Services, 2016b). The Minnesota Security Hospital (MSH) in St. Peter provides a secure inpatient setting for treatment of severe mental illness individuals committed as mentally ill and dangerous.

All state spending for the Direct Care and Treatment, Mental Health and Substance Abuse Treatment Services activity for FY 2017 was $483 million, which includes funding for mental illness, chemical dependencies, and other complex conditions. The 2016 legislature appropriated a $21 million increase for FY 2017 to increase staffing levels in CBHHs and AMRTC (Minnesota Department of Human Services, 2016a).

Figure 6: Direct care and treatment services

Service	Year	Number of individuals served
Mental health inpatient and residential services	FY 2015	1,300
Minnesota Security Hospital services at Saint Peter	FY 2015	242

Source: Minnesota Department of Human Services, 2016a

Findings

Overview

The following section highlights findings from the benefit-cost analyses. The seven services featured in this section represent a subset of the state mental health system. There are important assumptions and key factors to consider when discussing these results; three of the most important are:

Treatment vs control

These findings rely on studies that examine the difference between a treatment group that receives the studied treatment and a control group that receives no treatment or treatment as usual. Results compare the change in outcomes for the treatment group and the control group. For example, for behavioral health home services (BHH), we assume that an individual not receiving this coordination of services would still receive care from providers to help treat mental health. The difference in outcomes may be smaller between a treatment group and a treatment as usual control group, versus a treatment group and a control group that received no mental health treatment.

Return on investment is not the only measure of success

There is no target or optimal return on investment for mental health services. Effective programming may be able to save taxpayers resources, but that is not the only way a treatment is successful. Clinical gains, such as declining psychiatric symptoms, increases in global functioning, and keeping a person in their community, are valuable outcomes. In each benefit-cost analysis below, clinical gains, as well as decreased family burden or improved quality of life, do not receive a monetary value. Also, mental health services intend to meet an individual where they are in their path to recovery. Prevention strategies and early intervention may be more cost-effective, than inpatient care, but an entire continuum is necessary, as practitioners need resources to meet clients at all levels of need.

Episodic nature of mental health

The analyses rely on syntheses of existing research to determine the persistence of the impact of a given service on the underlying mental health condition. In some cases, the research does not cover a long enough period to determine if the effect persists beyond one year. In other cases, the research finds the effects only remain while the treatment is applied. To account for this, the analyses assume that the costs are for one year of treatment, and the benefits accrue for one year. This is true for all cases except cognitive-behavioral therapy (CBT). Research suggests CBT produces positive impacts on mental health conditions beyond one year. This, in part, explains the large benefit-cost ratio.

Figure 7: Benefit-cost analysis terms

Term	Definition
Benefits	Services shown to reduce the incidence of mental illness or help an individual manage symptoms of mental illness produce benefits to the participant, taxpayers, and members of society. Total benefits are the sum of taxpayer benefits such as avoided use of health care services plus other benefits to society, such as increased labor market earnings. Estimates are rounded to the nearest ten dollars.
Benefit-cost analysis	A systematic approach to estimate the cost effectiveness of alternative services or policies by comparing expected benefits to expected costs.
Benefit-cost ratio	The net present value of anticipated service benefits to state residents for every dollar in programmatic costs.[21] Ratios are rounded to the nearest ten cents.
Continuum of care category	A "continuum" is necessary to reflect the nature of conditions ranging from wellness to mental illness to severe mental illness. There are six non-sequential categories of activities and services in the mental health system, surrounding the individual, family and community at the center.
Evidence-based	A service or practice whose effectiveness has been rigorously evaluated using studies with treatment and control group designs.
Involved public agency	State or county public sector entities that have a role in funding, directing policy, setting conditions, or administering the service.
Impact on outcomes	Impact on outcomes reflects the degree to which there is evidence of effectiveness for a given service, as reflected in one or more of eight national clearinghouses. The categories largely mirror the levels of evidence defined by The Pew Charitable Trusts and MacArthur Foundation.
Proven effective	A proven effective service or practice has a high level of research on effectiveness, determined from of multiple rigorous evaluations (such as randomized controlled trials) or rigorous local evaluations.
Promising	A promising service or practice has some research demonstrating effectiveness, such as a single randomized controlled trial or evaluation with a comparison group design not contradicted by other such studies, but does not meet the full criteria for the proven effective designation.
Theory-based	A theory-based service or practice has no research on effectiveness or less rigorous research designs that do not meet the above standards. These services and practices typically have a well-constructed logic model or theory of change. This ranking is neutral. Services may move to promising or proven effective after research reveals their impact on measured outcomes.
No effect	A service or practice with no effects has no statistically significant impact on the measured outcomes. It does not include the service's potential effect on other outcomes. Research methods include rigorous evaluations, such as randomized controlled trials or rigorous local evaluations.

[21] Each benefit-cost ratio includes a risk analysis. The model uses a Monte Carlo Simulation to estimate the likelihood the investment will at least break even, given variance in costs and results. See appendix B.

Term	Definition
Category of services	These services represent a category of services that a client may receive, dependent on need. As services can vary from client to client, we cannot assess their effectiveness.
Net costs	The incremental cost of providing the service to one individual minus the cost of the likely alternative. For example, the net cost of providing individual placement and support minus the employment services the individual would otherwise receive. Estimates are rounded to the nearest ten dollars.
Net present value period	The difference between the present value of cash inflows and the present value of cash outflows.
Other societal benefits	Benefits that accumulate to society are increased labor market earnings, and in some cases avoided premature deaths from depression and serious mental illnesses. Estimates are rounded to the nearest ten dollars.
Per participant benefits	The difference between the present value of cash inflows (anticipated benefits) from a given service and the present value of cash outflows (costs).
Service	A state- or county-implemented intervention that attempts to affect one or more outcomes, such as reducing hospitalizations or increasing employment.
Source of evidence	The source of evidence is the entity whose research synthesis was used to determine each service's effectiveness. For adult mental health services, these sources are the Washington State Institute of Public Policy (WSIPP) or the Substance Abuse and Mental health Services Administration (SAMHSA). See Appendix A.
Taxpayer benefits	Taxpayer benefits include health care costs that would have been incurred by the state. These are marginal health care costs avoided as the result of changes in mental health conditions, such as reductions in hospitalization, emergency room visits, and office-visits. Estimates are rounded to the nearest ten dollars.
Time frame	The length of time the benefits accrue from participation in the service. We rely on research to determine persistence of benefits. Cognitive behavioral therapy is the only service featured in this document for which benefits continue to accrue beyond the period of service.

State benefit-cost ratio
The primary benefit-cost ratio shown is a state benefit-cost ratio. It does not include any benefits or costs that accrue to federal taxpayers. Those benefits and costs, as well as, the federal benefit-cost ratio, are broken out separately in the profile (beige column). For more information on how we apportioned state and federal benefits and costs, see Appendix B.

Behavioral Health Home Services (BHH)

BHH is Minnesota's version of the federal "health home" benefit for Medical Assistance (MA) enrollees.[22] Health home services are federally required to provide six core services: comprehensive care management, care coordination, health and wellness promotion, comprehensive transitional care, individual and family support, and referral to community and social services (Centers for Medicare & Medicaid Services, 2016). A multi-disciplinary team coordinates care for BHH enrollees, including a team leader, integration specialist, a systems navigator, and a qualified health home specialist. Together this team coordinates comprehensive physical and behavioral health services, care-coordination with non-clinical services, and aids the development of skills to improve health literacy, wellness and self-management. These services began in Minnesota in July of 2016.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Promising	Washington State Institute of Public Policy	Community Services & Supports	Counties, Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

Benefit-cost ratio
$1.40

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$200	$120	$80	$160
Net costs	$150	$150	$150	$200
B/C ratio	$1.40	$0.80	$0.60	$0.80

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: The cost for behavioral health home services is the average annual payment to providers for the service less a conservative estimate of the prior cost of professional, inpatient hospital, and pharmacy claims for those participants (treatment as usual).

[22] The Patient Protection and Affordable Care Act of 2010 (ACA) created an optional "health home" benefit so that states could better coordinate care for Medical Assistance enrollees with chronic conditions. Beginning on July 1, 2016, BHH became an MA covered service in Minnesota.

Outcomes: The total state benefits of the service is equal to $200 annually per participant. As reflected in the table below, the model estimates benefits from declines in hospitalization and emergency room visits--$120 annually per participant for state taxpayers and $80 for program participants.

For individuals with serious mental illnesses (SMI), coordinated care models like Behavioral Health Home Services have the potential to address healthcare inequities. For example, a 2006 study highlighted a 25-year mortality gap between individuals with SMI and the general population (Colton & Manderscheid, 2006). State-specific data confirms this mortality gap in Minnesota (Trangle et al., 2010). Treatable physical illnesses commonly occur alongside SMI (Viron et al., 2014; Druss & Walker, 2011), and these individuals are more likely to have cardiovascular risk factors like hypertension, diabetes, and obesity than the general population (Perez-Pinar et al., 2016; Gladigau et al., 2013; Lawrence et al., 2013; al., 2013; Vancampfort et al., 2013; Osborn et al., 2006). This can lead to early death from heart disease (Lawrence et al., 2013; Trangle et al., 2010). Screening for cardiovascular risk factors are not routinely done in psychiatric care settings, and there is a lack of communication between behavioral health and primary care providers, which may lead to untreated symptoms (Mangurian et al., 2013). A randomized controlled trial found coordinated care models, like BHH, lowered cardiovascular risk, increased rates of establishing and sustaining primary care, and increased quality of life (Druss et al., 2010; Druss et al., 2011). The model does not include these outcomes as monetized benefits.

Research outcomes for Behavioral Health Home Services

Outcomes	Direction	Monetized?
Hospitalization	Decrease	Yes
Employment	*	Not applicable
Homelessness	*	Not applicable
Psychiatric symptoms	Increase	No
Crime	*	Not applicable
Global functioning	Increase	No

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not reviewed the impact of the service on this outcome.

Funding: BHH providers receive a per-member per-month payment for each individual. There is an enhanced rate of $350 for the first six months of service and an ongoing rate of $245. For the first two years of BHH in Minnesota, the federal government will provide a 90 percent match. This will decrease the cost and, as such, increase Minnesota taxpayer return on investment. In recognition that the enhanced federal match is time-limited, this analysis assumes an average federal match of 57 percent.

Additional detail: One study, Killbourne et. al (2008) had a small sample size (27) and relatively short follow-up period, which authors suggest may have led to the increase in psychiatric symptoms.

Cognitive Behavioral Therapy (CBT)

Cognitive-behavioral therapy (CBT) is a form of psychotherapy where individuals identify and restructure unhealthy patterns of thought. By changing these patterns, therapists help clients develop more productive behaviors and beliefs. CBT is a part of numerous mental health treatment regimens and evidence suggests it can help treat anxiety disorders, depression, trauma, post-traumatic stress disorder (PTSD), and other conditions. The present analysis combines the findings for treatment of three types of individuals (those with anxiety disorder, depression, and PTSD). As discussed below, results for CBT tend to be higher because research shows persistent impacts of the service on client symptoms.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Proven effective	Washington State Institute of Public Policy	Basic Clinical Services	Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

State ratio
Anxiety **$66.00**
Depression **$36.40**
PTSD **$30.80**

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$37,500	$4,980	$32,520	$9,100
Net costs	$570	$570	$570	$790
B/C ratio	$66.00	$8.80	$57.20	$11.50
Benefits	$20,690	$2,820	$17,870	$4,920
Net costs	$570	$570	$570	$790
B/C ratio	$36.40	$5.00	$31.40	$6.20
Benefits	$17,490	$4,720	$12,780	$8,060
Net costs	$570	$570	$570	$790
B/C ratio	$30.80	$8.30	$22.50	$10.20

Assumptions: This assumes benefits and costs for the average adult for one cycle of service. For these services, returns continue to accrue after the service ends because the research shows CBT can have a permanent impact on persistence of the underlying condition. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: This reflects the cost of 20 hours of cognitive behavioral therapy using 2015 fee for service group and individual psychotherapy rates.

Outcomes: Cognitive Behavioral Therapy generates large benefit-cost ratios because research demonstrates that the service continues to generate benefits after the participant ends treatment. In other words, it leads to an ongoing decrease of the underlying condition. For anxiety, lifetime benefits for the state are $37,500 and the state benefit-cost ratio is $66. For depression, lifetime benefits are $20,690 and the state benefit-cost ratio is $36.40. For PTSD, lifetime benefits are $17,490 and the state benefit-cost ratio is $30.80. The state benefits from both increases in tax revenues related to employment and declines in health care costs from decreased anxiety disorder, major depressive disorder, and post-traumatic stress.

In the one-year lens we use for other services, CBT for adult anxiety total benefits (both state and federal) are $2,310, adult depression is $2,820, and PTSD is $4,910. While other services analyzed theoretically have benefits that persist after the service ends, CBT was the only one available in the Results First statistical model where the research literature shows benefits after treatment ends.

Research outcomes for Cognitive Behavioral Therapy

Outcomes	Direction	Monetized?
Hospitalization	*	Not applicable
Employment	Increase	Yes
Homelessness	*	Not applicable
Health care	Decrease	Yes
Psychiatric symptoms	Decrease	No
Crime	*	Not applicable
Global functioning	*	Not applicable

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not assessed the impact of the service on this outcome.

Funding: Cognitive Behavioral Therapy is a type of psychotherapy and is reimbursable under Medical Assistance. Outpatient and inpatient settings may use mental health grant dollars to treat individuals not covered under Medical Assistance. MMB could not identify any way to determine the amount of state funding spent on CBT because claims data does not differentiate between this and other forms of psychotherapy.

Additional detail: Cognitive Behavioral Therapy, not defined as a service in the traditional sense, is a care protocol prescribed by a physician. The state funds these services through Medical Assistance and MinnesotaCare; certain grant services may also cover CBT as part of a broader treatment plan. CBT is the only care protocol analyzed in the benefit-cost analysis. CBT is a component of many other outpatient and inpatient services.

Certified Peer Specialists

The Department of Human Services trains and certifies qualified individuals who have experience with mental illness to educate, engage, encourage, advocate, and support individuals with a mental illness. By sharing their own story of mental illness and recovery, a peer specialist helps individuals discover their own strengths and develop unique recovery goals. Providers of peer services are able to bill under Medical Assistance for services related to client education, assessment of strengths, self-advocacy, and engagement, support, and encouragement. Multiple approved agencies provide peer services within the following mental health rehabilitative services: Assertive Community Treatment (ACT), Adult Rehabilitative Mental Health Services (ARMHS), Crisis Response Services, Intensive Residential Treatment Services (IRTS), and mobile crisis teams.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Promising	Washington State Institute of Public Policy	Community Services & Supports	Counties, Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

State ratio
$3.60

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$1,810	$270	$1,540	$470
Net costs	$500	$500	$500	$690
B/C ratio	$3.60	$0.50	$3.10	$0.70

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: MMB based net cost on an estimate of the average per participant service hours from a certified peer specialist (Sledge, et al., 2011), multiplied by Minnesota's average fee for service reimbursement rate for a certified peer specialist. The comparison group for the research are teams without peer specialists; therefore, there is no counterfactual cost.

Outcomes: The addition of a peer specialist leads to increased employment and small declines in hospitalization.[23] State taxpayers gain $270 from declines in health care costs and estimated increases in tax revenue from the greater rates of employment among those served by peer specialists. An estimated $1,810 in benefits are associated with each client served. These gains are primarily due to increases in earnings.

Certified peer specialist services (CPS) demonstrate positive impacts on many other factors. We are unable to monetize the impact of decreased homelessness or increased global functioning. Research has found neutral impacts on psychiatric symptoms and crime, compared to the control group.

Research outcomes for Certified Peer Specialists

Outcomes	Direction	Monetized?
Hospitalization	Decrease	Yes
Employment	Increase	Yes
Homelessness	Decrease	No
Psychiatric symptoms	Neutral	No
Crime	Neutral	No
Global functioning	Increase	No

Source: WSIPP, 2014

Funding: Starting in 2007, the Centers for Medicare and Medicaid specified requirements for Medical Assistance-funded peer support. In the same year, Minnesota followed by allowing certified peer specialists as part of Assertive Community Treatment (ACT), Adult Rehabilitative Mental Health Services (ARMHS), and other services. The Department of Human Services found that providers reported it was difficult to find qualified certified peer specialists (Minnesota Department of Human Services, 2016). Even when providers were able to find them, 47 percent reported that the payment rates were not financially sustainable.

Additional detail: There is unmet demand for CPS, but it is difficult to find individuals that meet the present qualifications (Mental Health Division, 2016). Many existing cultural healers, cultural brokers, and elders have community connections in specific populations that may make them effective in supporting individuals receiving mental health services (Governor's Task Force on Mental Health, 2016a). Theoretically, this could reduce mental health disparities by using a cultural lens with services.

[23] WSIPP meta-analysis on the addition of a peer specialist to the treatment team includes ten studies: http://www.wsipp.wa.gov/BenefitCost/Program/290

Illness Management and Recovery (IMR)

IMR is a psychiatric rehabilitation practice incorporated into several community services and supports: Assertive Community Treatment (ACT), Adult Rehabilitative Mental Health Services (ARMHS), and Intensive Residential Treatment Services (IRTS). The principles of IMR align with a recovery-oriented, person-centered system of community mental health services. Weekly sessions provide information about recovery strategies, mental illness, how to build social support, effective use of medication, and tactics to reduce relapses. Practitioners employ strategies including motivational, educational, and cognitive-behavioral therapy (SAMHSA, 2009). Motivational strategies help individuals realize their personal strengths and acknowledge past disappointments while focusing on future accomplishments. Educational strategies teach individuals about their illness and recovery. Cognitive-behavioral strategies focus on how to apply this information.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Proven effective	Washington State Institute of Public Policy	Community Services & Supports	Counties, Minnesota Department of Human Services, University of Minnesota (MNCAMH)

Benefit-cost analysis (compared to treatment as usual):

State ratio
$1.40

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$1,250	$280	$970	$450
Net costs	$880	$880	$880	$1,230
B/C ratio	$1.40	$0.30	$1.10	$0.40

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: The cost for IMR represents the average cost to provide the service in three common settings: outpatient, IRTS, & ARMHS. The average number of hours (35) was multiplied by the fee-for-service cost of individual and group therapy. There is no counterfactual cost. These figures are based on conversations with IMR trainers and DHS.

Outcomes: Program participants are the primary beneficiary through increases in employment ($970). In addition, state taxpayers gain $280 in benefits, including $130 from increased tax revenues related to employment, and $150 from declines in health care costs related to small declines in hospitalization.

Research has also found self-reported improvement in illness management, suicidal ideation, distress, and psychiatric symptoms (Fardig, Lewander, Melin, & Folke, 2011; Levitt, et al., 2009). The model does not monetize these benefits.

Research outcomes for Illness Management and Recovery

Outcomes	Direction	Monetized?
Hospitalization	Decrease	Yes
Employment	Increase	Yes
Homelessness	*	Not applicable
Psychiatric symptoms	Decrease	No
Crime	*	Not applicable
Global functioning	*	Not applicable
Suicidal ideation	Decrease	No

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not assessed the impact of the service on this outcome.

Funding: Illness Management & Recovery is a psychiatric rehabilitation practice covered under Adult Rehabilitative Mental Health Services (ARMHS), Assertive Community Treatment (ACT), and Intensive Residential Treatment Services (IRTS).

Additional detail: The meta-analysis examines traditional IMR. In Minnesota, there is also enhanced IMR (E-IMR), which is an evidence-based practice for individuals with co-occurring disorders. The Minnesota Center for Chemical and Mental Health (MNCAMH) offers workshops and training for IMR and E-IMR. Centers like these can play a valuable role in enabling providers to deliver services, like IMR, effectively.

Conversations with MNCAMH and DHS indicated that providers often use IMR as a "technique" instead of a treatment. In practice, that means that clinicians incorporate learnings from IMR, instead of working through the specific modules. Even when providers deliver IMR as a regimented set of modules, they often shorten it to meet client needs and reimbursement requirements. For example, MNCAMH has offered adaptations to IMR in IRTS by picking a few of the most important modules for clients. While these adaptions are sometimes necessary to meet client needs and MA reimbursement rules, the above benefits assume completion of all of the IMR modules.

Individual Placement and Support (IPS)

IPS is an evidence-based practice that promotes the recovery of people who have serious mental illness through participation in work (Drake, Bond, Goldman, Hogan, & Karakus, 2016). Individuals with a serious mental illness find and hold competitive employment of their choosing in their communities, and concurrently, receive mental health services. A collaborative partnership implements IPS services, comprised of a DHS approved mental health services provider, community employment providers, and Minnesota Department of Employment and Economic Development/Vocational Rehabilitative Services. Minnesota is also a member of the International IPS learning community. This helps to ensure fidelity to the approach and collect outcome data. Presently, the service is operating in 48 counties.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Proven effective	Washington State Institute of Public Policy	Community Services & Supports	Counties, Minnesota Department of Employment & Economic Development, Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

State ratio
$2.10

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$1,520	$200	$1,320	$350
Net costs	$710	$710	$710	$0
B/C ratio	$2.10	$0.30	$1.80	n/a

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits from increased employment and slight declines in hospitalization to their respective state and federal sources.

Cost: This reflects the mean cost per client. Funding comes primarily from a state grant. We were unable to determine the level of county levy contributions to IPS services, and, therefore, we do not include this potential source. This could contribute to an overstated benefit-cost ratio. The counterfactual is the cost of purchased vocational services for individuals with mental illness.

Outcomes: Nearly all the benefits stem from increases in employment. These benefits accrue to participants ($1,320) and government, through income tax gains ($200). There are also small gains from a slight decrease in the probability of hospitalization. This analysis may also understate the impact, as it does not assume any reduced use of public health insurance that could result from finding and retaining employment. Finally, our model only monetizes the impact of the service in year one. Other research has found that IPS gains remain durable over many years (Becker, Whitley, Bailey, & Drake, 2007; Salyers, Becker, Drake, Torrey, & Wyzik, 2004).

Research outcomes for Individual Placement and Support

Outcomes	Direction	Monetized?
Hospitalization	Neutral	Yes
Employment	Increase	Yes
Homelessness	*	Not applicable
Psychiatric symptoms	Decrease	No
Crime	*	Not applicable
Global functioning	*	Not applicable
Competitive employment	Increase	No
Hours worked	Increase	No
Earnings	Increase	No

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not assessed the impact of the service on this outcome.

Funding: Individual Placement and Support is funded by a $2.6 million state grant to DEED-Vocational Rehabilitation Services program (DEED-VRS). In addition, counties may supplement this grant with additional funding from Adult Mental Health grant funds and local tax revenues. DEED-VRS also purchases services on behalf of eligible individuals from the employment provider. Reporting from Minnesota's Social Services Expenditure and Grant Reconciliation Report indicates the total county spending for supported employment was $840,000 in CY2015 (Minnesota Department of Human Services, 2015). There is no way to determine if this spending is on IPS services or is on other types of supported employment. Therefore, we did not include county spending when estimating cost.

Additional detail: Minnesota collaborates with Westat's IPS International Learning Community. The Learning Community provides trainings, access to researchers, and a community of practice that supports effective implementation. It also supports collection of employment outcome data. As of spring 2016, 55 percent of Minnesota counties had some IPS capacity. According to a 2014 report from DEED-VRS, even in counties were IPS is available, it had limited capacity (Courtney, 2014).

Mobile Crisis Response

Adult mental health crisis response services assist individuals experiencing a mental health crisis.[24] People going through a crisis can call county-run crisis phone lines to talk to professionals or set up visits. When needed, dispatchers send a mobile crisis team to a person's home or into the community to de-escalate or stabilize a person. They also follow-up to ensure the individual receives longer-term support and services. Mobile crisis response services include one or two trained crisis responders who come to the home or a designated meeting place. These meetings are face-to-face, short-term, and in many counties are available 24 hours a day, every day of the year.

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Proven Effective	Washington State Institute of Public Policy	Crisis Response Services	Counties, Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

State ratio
$3.90

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$1,710	$520	$1,180	$250
Net costs	$430	$430	$430	$50
B/C ratio	$3.90	$1.20	$2.70	$5.60

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: Uniform participation costs and data are difficult to gather and vary from county to county. This estimate shows the cost of services (crisis response, stabilization, and cost of calls that result in a response), but does not include fixed costs related to a call center. MMB calculated the total per person cost by taking the annual unique crisis episodes per participant and multiplying it by average unit cost for service. We estimate the state share to be 90% and the federal share to be 10%. The counterfactual reflects an estimate of the proportion of the time that the client would have otherwise needed a police intervention or an ER visit—based on responses to client surveys.

[24] Minnesota Statutes, 2015. 256B.0624, subd. 2(a). "Mental health crisis" is an adult behavioral, emotional, or psychiatric situation which, but for the provision of crisis response services, would likely result in significantly reduced levels of functioning in primary activities of daily living, or in an emergency situation, or in the placement of the recipient in a more restrictive setting, including, but not limited to, inpatient hospitalization."

Outcomes: Research literature finds taxpayer and other societal benefits from the decline in hospitalization and crime resulting from mobile crisis team engagements. The estimated impact from declines in health care costs and criminal justice costs for Minnesota in one year is $1,710. Society also benefits through the decline in tangible and intangible costs related to crime victimization ($1,180). The available research literature did not estimate changes in employment, homelessness or changes in psychiatric symptoms.

Research outcomes for Mobile Crisis Response

Outcomes	Direction	Monetized?
Hospitalization	Decrease	Yes
Employment	*	Not applicable
Homelessness	*	Not applicable
Psychiatric symptoms	*	Not applicable
Crime	Decrease	Yes
Global functioning	*	Not applicable

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not assessed the impact of the service on this outcome.

Funding: Mobile Crisis funding comes largely from state and county sources. There are large fixed costs associated with maintaining call centers and staff lines. In 2016, $13.6 million was allocated to ensure all counties and two tribal nations have the service. Barriers remain, however. For example, crisis providers receive a lower payment than an office visit and are unable to bill for telephone support, service coordination, or travel (Community Supports Administration, 2015). Moreover, many counties, especially in Greater Minnesota, still do not have the service 24/7.

Additional detail: Increased funding in 2015 for mobile crisis response includes language directing the Commissioner of DHS to "establish and implement state standards for crisis services."[25] This work is ongoing. Key issues under discussion include: standardizing criteria for dispatching mobile crisis response; promoting better collaboration between rural hospitals and mobile crisis teams; ensuring that crisis team members are able to authorize transport holds; and improving training so that team members can address different cultural backgrounds (Governor's Task Force on Mental Health, 2016a).

[25] Minnesota Statutes 2016, section 245.469. Emergency Services. Subd. 3. Mental health crisis services.

Wellness Recovery Action Plan (WRAP)

Wellness Recovery Action Plan is an illness self-management intervention with an educational component to promote healthy living and a psychological component that involves peer support (Cook, et al., 2012). This helps individuals monitor, reduce, modify, change or eliminate distressing symptoms through planned responses. Certified educators facilitate weekly group sessions where participants identify resources for daily living, symptom triggers, and early warning signs of crisis periods. Each WRAP plan tailors to the individual. It may include daily maintenance plans, a list of external events or circumstances that trigger uncomfortable feelings, identification of early warning signs that could indicate the need for action, and a crisis plan to let others know when they need to take over responsibility and decision-making (Copeland, 2015).

Impact on outcomes	Source of evidence	Continuum of care category	Involved public agencies
Promising	Washington State Institute of Public Policy	Community Services & Supports	Counties, Minnesota Department of Human Services

Benefit-cost analysis (compared to treatment as usual):

State ratio
$0.80

Type	State total	State taxpayer	Other state societal benefits	Federal
Benefits	$370	$50	$320	$80
Net costs	$460	$460	$460	$640
B/C ratio	$0.80	$0.10	$0.70	$0.10

Assumptions: This assumes benefits and costs for the average adult Medical Assistance participant for one cycle of treatment. Benefits only accrue in the year of treatment. MMB apportioned benefits and costs to their respective state and federal sources.

Cost: MMB relied on provider interviews and the research literature to determine the average treatment hours (20) and clinician types. From this research, MMB took the Medical Assistance fee-for-service reimbursement for the hours and type of clinicians needed to deploy WRAP, if it were reimbursable. Presently, nonprofits offer this service through donations, client self-pay, and private insurance; their cost is often lower than the total state and federal WRAP cost ($1,100) above estimate, at around $500 per client for a 5-day WRAP training.

Outcomes: Most of the benefit is associated with increased participant earnings related to small declines in anxiety disorder ($320). Relatedly, state tax receipts are estimated to increase ($50). The research also shows small declines in health care costs from decreased anxiety disorder.

According to a meta-analysis by Washington State Institute of Public Policy, WRAP is associated with increases in hope, patient self-advocacy, and mental health recovery (2014). The model is unable to monetize these benefits.

Research outcomes for Wellness Recovery Action Plan

Outcomes	Direction	Monetized?
Hospitalization	*	Not applicable
Employment	*	Not applicable
Homelessness	*	Not applicable
Psychiatric symptoms	Decrease	No
Crime	*	Not applicable
Global functioning	*	Not applicable
Anxiety disorder	Decrease	Yes
Hope	Increase	No

Source: WSIPP, 2014; * Research reviewed by NREPP & WSIPP has not assessed the impact of the service on this outcome.

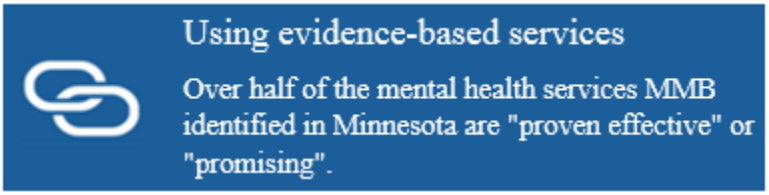
Funding: Medical Assistance does not reimburse this service.[26] In some cases, counties may pay for this service through the Community Access for Disability Inclusion (CADI) waiver. A Certified Peer Specialist can also help clients implement their WRAP plan, but, according to provider interviews, only after that individual has taken the initial course. In our research, we found a number of nonprofits that offer the service with funding from client self-pay, private insurance, or donations. Nonprofits offering the services had lower costs than the above findings.

Additional detail: In discussions with practitioners, we learned there were concerns that many providers were not keeping with model fidelity. They attribute this to a lack of training in WRAP and changes made to keep cost down (shorter sessions, higher clinician to staff ratios). If providers fail to keep fidelity with the model, the state may not see the anticipated benefits.

[26] For consistency, we modeled this service as reimbursable by Medical Assistance. In part, this was to ensure consistency with how we modeled the other services in the analysis, and, in part, to estimate returns if it were reimbursable.

Key considerations

Using evidence-based services

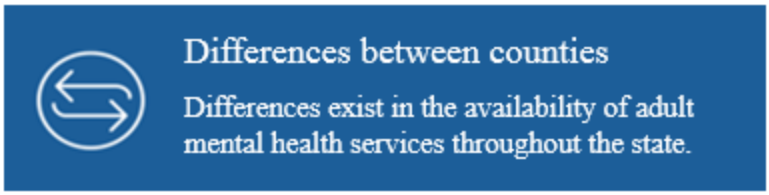


As reflected in the Results First inventory of services (Appendix A), the Department of Human Services and Minnesota counties implement many evidence-based services. The benefit-cost analyses show that implementing evidence-based services enables state and local governments to avoid health system costs, and in some cases, increase participant earnings or avoid criminal justice costs. While there is a robust evidence base from rigorous evaluations of services in our benefit-cost analyses, we do not have such studies for many mental health treatments delivered in Minnesota. Of the 33 services listed in the program inventory, 20 are listed “proven effective” or “promising.” For the remaining services, additional research can determine if these services are generating positive outcomes.

While evidence-based services should lead to positive outcomes, they do not always reflect diversity or emerging practices. It may not be advisable to displace new, promising, or theory-based treatments. Literature suggests there is a 15-20 year lag between the discovery of evidence-based practices and their wide use in mental health care (New Freedom Commission on Mental Health, 2003; Gioia & Dziadosz, 2008; McHugo, et al., 2007; APA/CAPP Task Force on SMI and SMD, 2007; Institute of Medicine, 2001). It takes time to understand, learn, and implement effective services. In the absence of rigorous evaluations, practitioners can still ground new services in known best practices and outline a theory of impact.

To assist in developing and implementing new services, the University of Minnesota launched the Future Services Institute. The Institute seeks to advance human services by working with public agencies and nonprofit service providers to cultivate and disseminate innovative ideas and evaluate the effectiveness of these new ideas through rapid-cycle learning structures. The Future Services Institute also supports appropriate and effective service delivery to ensure people in need receive high-quality treatment.

Differences between counties



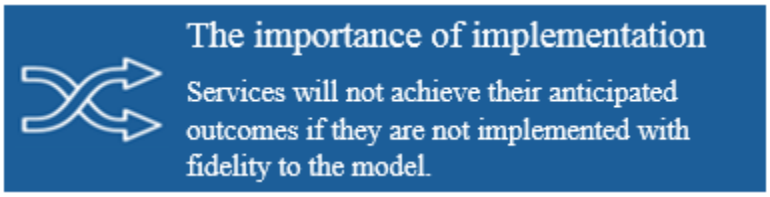
The state-directed, county-administered mental health governance model helped Minnesota develop community-based mental health treatment and services. Deinstitutionalization, health care-reform, and a move to person-centric care have exposed weaknesses and ambiguities in the system. Multiple funding streams finance care, and most operate in isolation of each other. This leads to differences in service availability across Adult Mental Health Initiative (AMHI) regions and counties. When a service is not available, individuals have to travel to receive care, often waiting for long periods. This creates disparities because some people do not have the means to travel or wait for care.

As described in an earlier section, the Mental Health division within the Department of Human Services examined mental health service availability by AMHI region. All regions in the state noted limited availability in many evidence-based services including mobile crisis, Assertive Community Treatment, Adult Rehabilitative Mental Health Services (ARMHS) and permanent supportive housing (Community Supports Administration, 2015). These gaps were especially acute in rural areas of the state. Resources, proximity, workforce availability, and other factors can make implementing evidence-based practices difficult, especially in Greater Minnesota.

Social Services Expenditure and Grant Reconciliation Report shows total human services spending—which includes spending in health, social service programs, and support programs—per capita was $2,463 in CY2015 (Minnesota Department of Human Services, 2015). On a county-by-county basis, human services costs ranged from $1,240 per capita to $3,890. Most mental health spending falls into support programs, where per capita spending ranged from $410 per capita to $1,090. While spending per capita is not a perfect proxy for service availability, it contributes with other evidence to suggest that services may not be equal across counties.

As other reports have noted, discrepancies exist because of lack of clarity in responsibility, levels of investment from county to county, workforce availability, cultural differences, population density, and other factors. All these contribute to varying levels of investment. The result of this, however, is an inconsistent application of evidence-based practices in mental health.

The importance of implementation



The findings in this report demonstrate the potential for evidence-based practices (EBP) to generate positive outcomes for individuals and taxpayers alike. Despite extensive research on best practices, many mental health services resembling evidence-based practices lack "fidelity" (Drake, et al., 2001; Frese, Stanley, Kress, & Vogel-Scibilia, 2001). Fidelity "depends upon a precisely delineated program logic, a clearly specified implementation plan, and well-defined outcomes" (Weiss, Bloom, & Brock, 2014). In other words, providers give treatments to the right population, in the right dosage, by the right professionals, at the right time and place.

In the context of this report, each benefit-cost analysis assumes practitioners deliver services with fidelity. When they do not, the state and participants may not achieve the anticipated outcomes. It is common for a mental health services provider to set out to implement an evidence-based program, and end up with something different. Causes include lack of resources, client need, undertrained staff, competing priorities, and myriad other reasons.[27] In interviews, participants noted implementation and monitoring have suffered from a lack of understanding and few champions to advocate at the legislature.

In Minnesota, one example of the challenges delivering services with fidelity occurs with Illness Management & Recovery (IMR). IMR is an evidence-based service that helps individuals with serious mental illness collect information about their illness and develop recovery strategies. The program is composed of 11 modules broken out into 40-50 weekly group sessions and administered by trained professionals (SAMHSA, 2010). In discussions with Minnesota providers, we found the IMR model was adapted to ensure treatment is reimbursable by Medical Assistance (Meyer-Kalos, 2016). For example, when providers deliver IMR with Intensive Residential Treatment Services (IRTS), the IMR service length shortens from 40 to 26 weeks to meet the shorter service length of an IRTS participant. While these alterations are often necessary to accommodate clients, the benefit-cost analysis assumes providers deliver services according to the IMR model design. It may also be beneficial to evaluate whether changes in design generate the same outcomes.

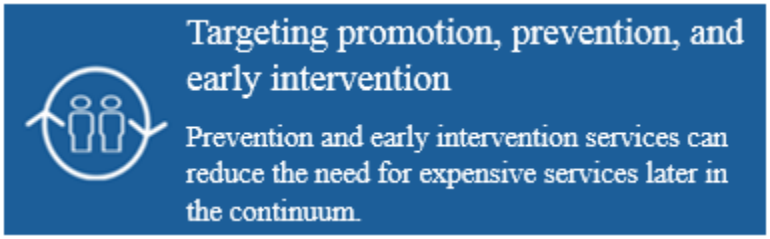
[27] In some cases, changes to a program can even be positive; for example, when practitioners adjust a service to meet cultural or contextual needs of clients (Moulton & Sandfort, 2015). Only experts should make adjustments to the defined model, and they should follow best practices.

Minnesota mental health services could benefit from increased efforts to measure implementation fidelity. One example is DHS's work with Assertive Community Treatment (ACT), an evidence-based service that provides intensive clinical treatment and rehabilitative mental health services. In 2014, DHS refocused on the practices of its 27 ACT teams, which over time had slipped in their fidelity (Studer, 2016). From this, DHS assembled a community of stakeholders and revised ACT standards and statutes that better aligned with the model. The new standards cover 18 categories, including program evaluation and quality improvement that require the ACT team participate in program evaluation and quality improvement activities (Minnesota Department of Human Services, 2010).

In addition to the work DHS is doing to improve implementation, the University of Minnesota has taken a leadership role. With support from the legislature, Minnesota's Center for Chemical and Mental Health provides clinical training, assistance in evidence-based practice implementation, and research on best practices to clinicians across the state. Their work improves the training available for evidence-based practices, including Illness Management & Recovery and Integrated Treatment for Dual Disorders.

In spite of this progress, fidelity monitoring and evaluation represents a small portion of the overall mental health budget. Pursuing evidence-based practices has the potential to improve outcomes for Minnesotans, but if not properly implemented, individual and taxpayer benefits can go unrealized.

Targeting promotion, prevention, and early intervention



A continuum of care describes the complete range of services and activities available for individuals with mental health illness.

Figure 8: Mental health continuum of care

Nationally, much of the spending and attention takes place in the later stages of the continuum, with treatments occurring only after a crisis episode. While having all levels of treatment available is necessary, these services are more expensive—in terms of public and private payers, lost productivity, strain on individuals and families—than services earlier in the continuum. For example, per diem rates

at Anoka Country Metro Regional Treatment Center and Community Behavioral Health Hospitals are $1,375 and $1,866, respectively. (Minnesota Department of Human Services, 2016).

There are also high human costs of mental illness, including damage to family and social connections, loss of livelihood, and psychological and physical suffering. Supporting activities early in the continuum—mental health promotion, mental illness prevention, and early intervention—can reduce risk factors, increase protective factors, and create a path to avoid intensive services.

Evaluating the effectiveness of health promotion and illness prevention practices is difficult, but there is research on interventions that reduce mental illness risk factors, increase protective factors, and prevent psychiatric symptoms (Saxena, Jane-Llopis, & Hosman, 2006).[28] Two international studies suggest that educational and community awareness campaigns can make mental health information more available, encourage individuals to seek help earlier, and shorten the time an individual is untreated (Larsen & et al., 2001; Wright & et al., 2006). Prevention strategies which base policies on systematic assessments of the local population, target vulnerable populations to decrease stressors and enhance resilience, employ cultural adaptation to appropriate communities, and implement services with fidelity can decrease psychiatric symptoms and the onset of some mental disorders (Saxena, Jane-Llopis, & Hosman, 2006).

Increasing mental health literacy, dissolving the stigma of mental illness, and making resources more available are promotion and prevention strategies. Employing these strategies leads to early detection and encourages early treatment of mental illness, which can improve outcomes and create cost-savings (Cullberg & et al., 2006; Wright & et al., 2006).

Most of the services analyzed in this report target individuals with serious mental illness. Available research suggests early intervention services and activities can change the course of individuals with SMI and divert young adults from the disability system, but few empirical studies exist to confirm these nascent findings (Drake, Bond, Goldman, Hogan, & Karakus, 2016).

One encouraging practice, funded in 2015 by the Minnesota legislature—is First Episode Psychosis. This service identifies and provides case management, support and education, psychotherapy, and educational or employment opportunities to individuals 16-40 years old who are experiencing their first

[28] Controlled outcome studies on mental health promotion and mental illness prevention interventions are scare since they address whole schools, companies, communities or targeted populations while controlled studies primarily focus on a clinical setting or preventions which target individual or family levels. In addition, many prevention interventions use multi-component strategies with complex groups where researchers cannot control for dynamic external factors.

episode of psychosis. Findings from other states show declines in hospitalization, psychiatric symptoms, and increases in mental health recovery (Craig, et al., 2004; Petersen, et al., 2005; Srihari & Ozkan, 2015; Ruggeri, et al., 2015).

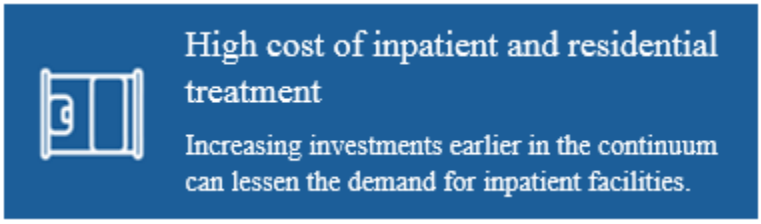
If mental health professionals engage individuals earlier in the continuum, they may avoid the need for more expensive treatment. This has potential for cost-savings to the individual and state. We estimated the relative lifetime cost of symptoms of serious mental illness (SMI) to a person in Minnesota to be more than $193,100, measured with today's dollar. There is not presently sufficient evidence of programs and services that prevent SMI altogether. It may be possible, however, to provide early treatment and support to reduce the total lifetime costs. The lifetime cost of SMI estimate includes three sources of benefits--crime, earnings, and health care--to the participant, taxpayers, and society.

Figure 9: Estimated lifetime crime, earnings, and healthcare cost of serious mental illness

Source of benefits	To participant	To taxpayers	Other societal benefits	Total benefits
Crime	$0	$520	$1,950	$2,470
Earnings	$107,480	$45,840	$7,500	$160,820
Health Care	$3,790	$11,640	$14,410	$29,830
Total	$111,270	$58,000	$23,860	$193,120

Source: Minnesota Management & Budget. Taxpayers includes by federal and state sources.

High cost of inpatient and residential treatment



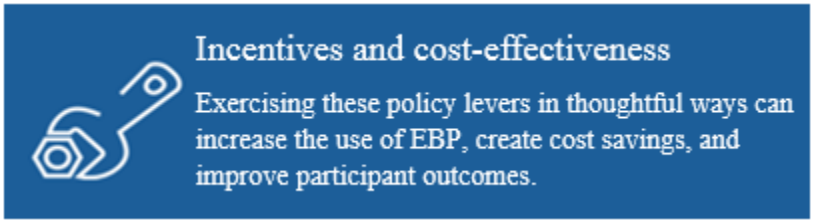
When an individual does not receive treatment early, and their symptoms worsen, they resort to services in the later stages of the continuum. Of those services, inpatient and residential services provide intensive levels of treatment and rehabilitation for persons with the most complex needs. Placement in these facilities follows care-protocols based on the client needs and seeks to stabilize patients before transfer to other treatment settings. These services are expensive, and as noted in the Results First Inventory, there is limited evidence of their effectiveness.

There are cost-effective services earlier in the continuum that improve symptoms and functioning. For example, SAMHSA (2014) notes "current literature generally supports that crisis residential care is as effective as other longer psychiatric inpatient care at improving symptoms and functioning." It also notes lower costs and higher patient satisfaction. If Minnesota enhances the earlier stages of its

continuum of care, it could lessen the demand for inpatient facilities; an important policy aim given the present shortage of inpatient psychiatric beds.

A number of other reports have highlighted this shortage.[29] In summary, a lack of community support services leads to overreliance on inpatient psychiatric beds and stays that exceed the needed length. Both issues exacerbate patient conditions and "waste scarce resources that could be better spent on appropriate care and prevention programs" (Direct Care and Treatment and Chemical and Mental Health Services Administrations, 2014, p. 43). A 2016 report by Wilder Research studied 20 community hospitals and found that 1 in 5 inpatient psychiatric bed days were avoidable if Community Behavioral Health Hospitals, substance abuse treatment programs, or Intensive Residential Treatment Services had capacity (Dillon & Thomsen, 2016). Given inpatient beds at Anoka-Regional cost $1,375 a day (Minnesota Department of Human Services, 2016), other community support services offer a more cost-effective option.

Incentives and cost-effectiveness



Minnesota's health care system is decentralized and diffuse. In this system, the state has the power to shape incentives by using different policy levers. These incentives are powerful system drivers to increase adoption of effective services. The three primary levers for the state are mandates, increasing public insurance reimbursement rates, and funding grants.

The state can shape the mental health system by covering procedures or requiring the clients receive certain types of services. In 2007, the Center for Medicare and Medicaid Services (CMS) set out requirements for funding peer support (Mental Health Division, 2016). Minnesota quickly passed legislation to cover Certified Peer Specialists—a service that this analysis indicates generates employment and health care benefits in excess of its cost.

These mandates can also create unintended consequences. The most pertinent example presently is the 48-Hour Law, mandated in 2013. The law requires prompt placement of civilly committed individuals

[29] These publications include the *Mental Health Acute Care Needs Report (2009), Mental and Behavioral Health: Options and Opportunities for Minnesota* (2015), *Plan for the Anoka Metro Regional Treatment Center (2014), Reasons for Delays in Hospital Discharges of Behavioral Health Patients(2016),* and *Governor's Task Force on Mental Health (2016).*

into a DHS facility (Office of the Legislative Auditor, 2016), but also creates an incentive to keep incompetent individuals in jail since that individual receives priority for placement in a state facilities. Prioritizing correctional populations makes it more difficult to place non-correctional placements in state facilities. At Anoka-Metro Regional Treatment Facility, 42 percent of the population came directly from jail in 2015, up from 13 percent in 2013 (Office of the Legislative Auditor, 2016).

Many of these individuals could receive their treatment in other settings, but beds are not available, so they continue to occupy a bed that a higher-need person could have utilized. As noted by the Governor's Mental Health Taskforce (2016a), this slow-down is like a traffic jam. When an individual occupies a bed at the wrong level of care, it reverberates through the system, creating a cascade of individuals who cannot transition to their next stage in recovery.

Less often, we hear about when incentives align properly and lead to improved client outcomes. One of the strongest mechanisms to induce adoption of a service is by including it as a reimbursable Medical Assistance service or increasing the rate of reimbursement for providers. In 2016, DHS introduced Behavioral Health Home services (BHH), a form of comprehensive care management and coordination. BHH is Minnesota's version of the federal "health home" benefit for Medical Assistance (MA) enrollees. Beginning on July 1, 2016, BHH became an MA covered service. The benefit-cost analysis estimates that this service, through reductions in health cost alone, generates a return that exceeds the cost.

Another policy lever is Adult Mental Health Grants. DHS awards grants to counties to cover start-up costs for new services, pay for services that are not Medical Assistance reimbursable, and to assist in pay for uninsured individuals (Governor's Task Force on Mental Health, 2016b). In 2015, an $8.6 million investment in mobile crisis and residential stabilization helped fund statewide access to crisis services, create a single phone number for crisis calls, and add stabilization beds (Minnesota Hospital Association, 2015). The mobile crisis response benefit-cost analysis demonstrates the service is able to reduce hospital use for psychiatric symptoms and decrease criminal justice costs from avoiding police responses to mental health crises. The legislature commissioned a rate report, due in January of 2017, to examine whether underlying Medical Assistance reimbursement rates for Mobile Crisis teams are sustainable.

Exercising these policy levers in thoughtful ways can increase adoption of evidence-based programming, create cost savings, and, most importantly, improve client outcomes.

Conclusion

The 2015 legislature instructed Minnesota Management & Budget (MMB) to conduct benefit-cost analyses for corrections and human services, using the Pew-MacArthur Results First Initiative framework. The need for high-quality research means that, currently, we are only able to examine a small subset of services in Minnesota's mental health continuum.

Overall, we found that evidence-based practices could increase the potential for attaining cost-effective mental health outcomes. We conducted a benefit-cost analysis for seven evidence-based practices; six had benefits that exceed their cost. Two of these services also generate taxpayer benefits that exceed the investment.

The report finds that the Minnesota Department of Human Services and counties routinely use evidence-based practices, but opportunities exist to deepen their use. For example, differences exist in the availability and use of evidence-based mental health services from county to county. We also stress the importance of delivering evidence-based services with fidelity. If practitioners are not delivering services according to their model, Minnesota may not see the outcomes they expect.

MMB is unable to separate results by demographic or socioeconomic status or monetize all possible benefits from each service; for example, improvements in psychiatric symptoms, decreased family burden, and improved quality of life. The research used to determine a service's impact includes many different outcomes; unfortunately, the Results First statistical model only monetizes hospitalizations, employment, and crime for mental health services. In addition, most cost-effectiveness analyses are unable to speak to other important values, including parity, equity, justice, fairness.

Nevertheless, benefit-cost analysis is a powerful tool to help make informed choices when employing scarce public resources.

Appendix A: Inventory of services[30]

The Results First inventories are an intermediary step to determine which services to include in the final benefit-cost analysis. Each contains information about the service, the agencies involved in funding or overseeing the service, service details, and the extent to which there is evidence that the services are attaining desired outcomes.

MMB places featured services in one of the five categories listed in the following table, based on evidence of effectiveness found in eight national clearinghouses. The categories largely mirror the levels of evidence defined by the Pew-MacArthur Results First Initiative. Services delivered in Minnesota that closely resemble ones featured in a national clearinghouse (with respect to the nature, length, frequency, and targeted population) or have been rigorously evaluated in Minnesota are included.

Proven effective	A proven effective service or practice offers a high level of research on effectiveness, determined through multiple qualifying evaluations outside of Minnesota or one or more qualifying local evaluation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Promising	A promising service or practice has some research demonstrating effectiveness, such as a single qualifying evaluation that is not contradicted by other such studies, but does not meet the full criteria for the proven effective designation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Theory-based	A theory-based service or practice has no research on effectiveness or less rigorous research designs that do not meet the above standards. These services and practices typically have a well-constructed logic model or theory of change. This ranking is neutral. Services may move up to promising or proven effective after research reveals their impact on outcomes.
No effect	A service or practice with no effects has no impact on the desired outcome. It does not include the service's potential effect on other outcomes. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Category of services	These services represent a category of services that a client may receive, dependent on need. As services can vary from client to client, we cannot assess their effectiveness.

[30] Higher resolution versions available at https://mn.gov/mmb/results-first/inventory-of-services/

Service Inventory: Adult mental health Updated 2/22/2017

This inventory presents information about services and treatments available in Minnesota to adults with mental illness. The level of evidence demonstrates the extent to which rigorous research has been completed. Where available, this research shows how effective the service is at generating positive client outcomes. The inventory lists four categories of outcomes, but does not include all potential outcomes, such as improvement in general health, global functioning, substance abuse, etc. A blue fill indicates a favorable impact on the outcome, a light red fill indicates an unfavorable impact on the outcome, a light gray fill means there is a neutral impact on the outcome, and a white space means research is not available. The research only includes outcomes verified by Washington Institute of Public Policy (WSIPP) or the National Registry of Evidence-Based Programs or Practices (NREPP). More information about the findings or about the Results First Initiative can be found at the bottom of the inventory.

Service/Practice	Description	Frequency of service	Impact on outcomes	Hospital-ization	Employment	Homeless-ness	Psychiatric symptoms	Source of evidence	Continuum of care category	Additional resources	Voices from the field
Assertive Community Treatment (ACT)	A non-residential rehabilitative mental health service model available to recipients at all times. Services include: case management, support and skills training (self-care, financial management, use of transportation, etc.), illness education and medication management, psycho-education to family members, and housing assistance.	3-4 visits per week	Proven effective	decreased	*	decreased	neutral	WSIPP	Community Services & Supports	DHS Provider Manual - ACT	
Cognitive Behavioral Therapy (CBT)	Cognitive-behavioral therapies (CBT) include various components, such as cognitive restructuring, behavioral activation, emotion regulation, communication skills, and problem-solving. It's a part of many services and has been shown effective in many forms of mental illness. CBT is a form of psychotherapy. There are many different forms of CBT to address specific diagnoses (anxiety, PTSD, trauma, etc.).	Weekly group and individual sessions	Proven effective	*	increased	*	decreased	WSIPP	Basic Clinical Services	DHS Provider Manual - Psychotherapy	CBT is not a service, but a care protocol, prescribed by treatment professionals.
Co-Occurring Disorders and Integrated Dual Diagnosis Treatment (IDDT)	Service is for individuals with co-occurring mental illnesses and substance abuse disorders. Includes counseling, education, case management, substance abuse treatment, help with housing, money management, relationships and social support.	Dependent on client need, often daily	Proven effective	decreased	*	decreased	neutral	SAMHSA	Community Services & Supports	DHS Technical Assistance Resources-IDDT	
Critical Time Intervention (CTI)	Time-limited case management model that is designed to support continuity of care and community integration for persons with severe mental illness who are transitioning from institutional settings. The service connects individuals to community resources and long-term supports. Typically lasts around nine months.	Ongoing	Proven effective	decreased	*	decreased	decreased	NREPP	Community Services & Supports		DHS requested federal matching funds to integrate CTI into existing Project for Assistance in Transition from Homelessness.
Dialectical Behavior Therapy (DBT)	A treatment program that uses a combination of individualized rehabilitative and psychotherapeutic interventions to treat dysfunctional coping behaviors and to reinforce adaptive behaviors. DBT is a form of psychotherapy.	Weekly group and individual sessions	Proven effective	*	*	*	decreased	WSIPP	Basic Clinical Services	DHS Provider Manual - DBT	
First Episode Psychosis Program	Provides early detection and treatment of mental illness. Services include assessment, education, family engagement, care coordination, and treatment.	Dependent on need, often multiple sessions per week	Proven effective	decreased	*	*	decreased	WSIPP	Early Intervention Services		
Illness Management and Recovery (IMR)	IMR includes educating recipients about mental illness and treatment including recovery strategies, stress management, medication use, social support, and developing relapse plans. This is often offered alongside ARMHS and ACT programs.	Weekly sessions	Proven effective	decreased	increased	*	decreased	WSIPP	Community Services & Supports	DHS Technical Assistance Resources - IMR	
Individual Placement & Support Services (IPS)	A collaboration between a DHS approved mental health provider, a community rehabilitation employment provider, and MN DEED. Seeks to promote recovery through employment. Services assist people with SMI find a job, keep employment, and earn a competitive wage.	Weekly until employment found, then intermittent check-ins to provide support	Proven effective	neutral	increased	*	decreased	WSIPP	Community Services & Supports	DHS Technical Assistance Resources - IPS	
Mental Health First Aid	Allows trained community members to identify early signs of mental illness or a mental health crisis. These first responders provide support and use a 5-step action plan to connect individuals to professional, peer, social, and self-help care.	Dependent on need	Proven effective	*	*	*	decreased	NREPP	Early Intervention Services	NREPP - Mental Health First Aid	
Mental Health Medication Management	Provides education for individuals on multiple medications. A trained pharmacist educates patients on how to take their medication and potential interactions and side effects.	Dependent on need, often weekly sessions	Proven effective	*	*	*	decreased	SAMHSA	Community Services & Supports	DHS Provider Manual - Medication Management	MMB literature review identified positive impact on psychiatric symptoms.
Mindfulness-Based Stress Reduction (MBSR)	Psychoeducational training for individuals with emotional or psychological distress. It is designed to reduce feelings out anxiety, negativity, and depression, and improve self-esteem, mental health, and functioning.	Weekly group sessions	Proven effective	*	*	*	decreased	NREPP	Basic Clinical Services		
Mobile Crisis Services	Mobile crisis services provide face-to-face, short-term, intensive mental health services during a mental health crisis or emergency. They help the recipient cope, identify resources, avoid hospitalization, develop an action plan and begin a baseline level of functioning.	Dependent on need	Proven effective	decreased	*	*	*	WSIPP	Crisis Response Services	DHS Provider Manual - Crisis Response	
Permanent Supported Housing	Long-term housing supports with community outreach and transportation assistance, education, skills development, crisis assistance, resource development and coordination, case management, and medical and psychiatric coordination. Housing First and Bridges are two examples of this service.	Housing is continuous. Services are dependent on need, but often weekly	Proven effective	decreased	increased	decreased	*	WSIPP	Community Services & Supports	DHS Housing Resources	

Service / Practice	Description	Frequency of service	Impact on outcomes	Hospital-ization	Employment	Homeless-ness	Psychiatric symptoms	Source of evidence	Continuum of care category	Additional resources	Voices from the field
Adult Rehabilitative Mental Health Services (ARMHS)	A set of services that were developed to bring recovery-oriented interventions to individuals with mental illness. Services include basic living and social skills, certified peer specialist services, community intervention, functional assessment, an individual treatment plan, medication education, and transition to community living services	Weekly sessions	Promising	*	increased	*	decreased	SAMHSA	Community Services & Supports	DHS Provider Manual - ARMHS	MMB literature review identified positive impact on employment and psychiatric symptoms.
Behavioral Health Home Services (BHH)	The health home builds linkages to community supports and resources as well as enhances coordination and integration of primary and behavioral healthcare to better meet the needs of people with multiple chronic illnesses. BHH provide case management, care coordination, health promotion, and transitional care when moving from inpatient to other settings. BHH are a form of care coordination.	Dependent on need, at least one contact per month	Promising	decreased	*	*	increased	WSIPP	Community Services & Supports	DHS Technical Resources - BHH	Research suggests psychiatric symptoms may be associated with additional client contacts for the recipients. Behavioral Health homes are a new service in Minnesota, starting in July 2016.
Case Management	Case managers conduct a functional assessment, develop an individual or family community support plan, ensure the coordination of services, monitor and evaluate services, and assist in obtaining other needed services. Case management varies in intensity based on need and is a component of many evidence-based practices.	Dependent on need, at least one session per month	Promising	*	*	*	decreased	SAMHSA	Community Services & Supports	DHS Provider Manual - AMH-TCM	Includes targeted case management. Counties noted that case management is the connective tissue that holds our mental health system together. MMB literature review identified positive impact on psychiatric symptoms
Certified Peer Specialist (CPS)	Qualified individuals with a lived experience of mental illness are trained to educate, engage, encourage, advocate and support individuals with a mental illness. Assertive Community Treatment (ACT), Adult Rehabilitative Mental Health Services (ARMHS) and Intensive Residential Treatment services include CPS.	Dependent on need	Promising	decreased	increased	decreased	neutral	WSIPP	Community Services & Supports	DHS Provider Manual - CPS	
Crisis Residential Treatment	Time-limited crisis services within a residential setting. Services include crisis assessment, intervention services and crisis stabilization; including referrals, updating the crisis stabilization treatment plan, supportive counseling, skills training and collaboration with other service providers in the community.	Ongoing evaluation and treatment while in residential setting	Promising	decreased	*	*	*	SAMHSA	Crisis Response Services	DHS Provider Manual - Crisis Services	MMB literature review identified positive impact on hospitalizations.
Family Psychoeducation	Family psychoeducation services are planned, structured and face-to-face interventions that involve presenting or demonstrating information. The goal of family psychoeducation is to help prevent relapse or development of comorbid disorders and to achieve optimal mental health and long-term resilience.	Weekly session	Promising	*	increased	*	decreased	SAMHSA	Basic Clinical Services	DHS Provider Manual - Family Psychoeducation	MMB literature review identified positive impact on employment and psychiatric symptoms.
Forensic Assertive Community Treatment (ACT)	A specialized ACT Team that services individuals transitioning and re-entering the community from correctional facilities. Services include: coordination with supervision officers, case management, support and skills training (self-care, financial management, use of transportation, etc.), illness education and medication management, family psychoeducation and housing assistance.	Dependent on need, multiple sessions per week	Promising	decreased	*	*	*	WSIPP	Community Services & Supports		
International Center for Clubhouse Development (ICCD) Clubhouse Model	A day treatment program for rehabilitating adults diagnosed with a mental illness. The program contributes to the recovery of individuals through use of a therapeutic environment, employment support, peer relationships, education, and housing. Clients, or members, assist staff in managing operations at the clubhouse.	Daily	Promising	*	increased	*	decreased	NREPP	Community Services and Supports		
Motivational Interviewing for individuals with SMI	Motivational interviewing is a brief, several-session treatment given prior to another form of psychotherapy in order to increase treatment effectiveness. Motivational interviewing seeks to resolve subject ambivalence to treatment and increase the likelihood that the subject will adhere to the treatment plan by positively engaging the subject through exploratory questioning.	Dependent on need, often weekly sessions	Promising	*	*	*	decreased	WSIPP	Basic Clinical Services	DHS "What is Motivational Interviewing?"	
Wellness Recovery Action Plan (WRAP)	WRAP helps people monitor, reduce, modify, change or eliminate distressing symptoms through planned responses. They enable people with psychiatric illnesses to formulate a wellness plan from the perspective of functioning at their best and most stable.	Often delivered as 2-3 day course	Promising	*	*	*	decreased	WSIPP	Community Services & Supports	NREPP - WRAP	
Crisis Intervention Team (CIT)	A model that provides training to law enforcement on how to respond to a mental health crisis. It includes 40 hours of training for officers. CIT seek to enhance communication, identify mental health resources for assisting people in crisis and ensure that officers get the training and support that they need.	Dependent on need	Theory-based	*	*	*	*		Crisis Response Services		A literature review on CIT indicate positive outcomes. The review, however, does not include any studies with an experimental design. http://bit.ly/2jAqII5
Day Treatment	Intensive daily group treatment and support. Treatment improves psychiatric stability, independent living skills, and healthy coping skills. Services are offered 3-5 days a week for around five to fifteen weeks. Day treatment seeks to help people move toward recovery by improving psychiatric stability, independent living skills and coping skills.	Three hours daily	Theory-based	*	*	*	*		Community Services & Supports	DHS Provider Manual - Day Treatment	

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Service / Practice	Description	Frequency of service	Impact on outcomes	Hospital-ization	Employment	Homeless-ness	Psychiatric symptoms	Source of evidence	Continuum of care category	Additional resources	Voices from the field
Other sets of services and settings in Minnesota's Mental Health Continuum											
Drop-in centers	Drop-in centers provide mental health and social supports for people with SMI and SPMI. Often these include peer-based community support services focused on wellness, building social connections, employment, reducing isolation, reducing hospitalization, and enhancing community integration. While services differ, they share the common elements of socialization, empowerment, and advocacy. SAMHSA includes this as part of consumer-operated services.	Dependent on need	Theory-based	*	*	*	*		Community Services & Supports	SAMHSA - Consumer-Operated Services	SAMHSA designates consumer-operated services as evidence-based. In practice, MMB found intensity and process of these services often differ from the EBP suggested by SAMHSA. Certified clubhouses, following the International Center for Clubhouse Development (ICCD) model, are a promising practice.
Intensive Residential Treatment Services (IRTS)	Time-limited mental health services in a residential setting. A mental health professional supervises the recipient 24 hours a day to enhance stability, foster personal and emotional development, and teach skills to live independently.	Daily while in residential setting	Theory-based	*	*	*	*		Inpatient & Residential Treatment	DHS Provider Manual - IRTS	DHS services informed by evidence-based practices but not studied holistically. NAMI notes that IRTS plays an important role in ensuring the appropriate care for individuals that do not meet the hospital level of care.
Partial Hospitalization	A multidisciplinary team, in an outpatient hospital facility or community mental health center, provides a time limited, structured program to resolve or stabilize an acute episode of mental illness. At a minimum, services include one session of individual, group, or family psychotherapy and two or more other services (such as activity therapy or training and education).	Daily treatment in outpatient facility	Theory-based	*	*	*	*		Community Services & Supports	DHS Provider Manual - Partial Hospitalization	
Urgent Care for Adult Mental Health	Provides immediate care for an individual experiencing a crisis. An on-site team of psychiatrists, nurses, social workers, and trained peer support staff provide care. This is often combined with detoxification, crisis services, and referrals to other mental health services.	Dependent on need. Short duration with referral to other services.	Theory-based	*	*	*	*		Crisis Response Services		
45 day bed Hospitalization	The Department of Human Services contracts with several psychiatric hospitals to extend their lengths of stay in order to prevent clients from having to go to Anoka Metro Regional Treatment Center. Sometimes referred to as contract beds.	Ongoing evaluation and treatment	Category of services	*	*	*	*		Inpatient & Residential Treatment	DHS Provider Manual - Inpatient	
Acute Care Hospital (inpatient setting)	Medical and psychosocial services in a hospital setting. Mental health professionals supervise patients 24 hours a day. Services include stabilization, medical care, therapy, patient education, and discharge planning. Examples include Community hospitals, Community Behavioral Health Hospitals (CBHHs), and Anoka-Metro Regional Treatment Center (ARMTC).	Ongoing evaluation and treatment	Category of services	*	*	*	*		Inpatient & Residential Treatment	DHS Provider Manual - Inpatient	
Assessments, testing, consultation, and findings	Set of outpatient services that evaluate and communicate (with patient and care team) recipient's mental health. This includes diagnostic assessment, psychological and neuropsychological assessments, psychiatric and physician consultations and explanation of findings.	Dependent on need	Category of services	*	*	*	*		Basic Clinical Services	DHS Provider Manual - Mental Health Services	
Care Coordination	Care Coordination provides face-to-face, telephonic and collaborative support starting with a comprehensive, client-centered assessment highlighting strengths and needs. Includes case management and wraparound services. Behavioral Health Homes and First-Episode Psychosis are two examples of evidence-based services that use care coordination.	Dependent on need, at least monthly	Category of services	*	*	*	*		Community Services & Supports		
Community Education and Prevention	An aggregate category that includes outreach, events, and workshops to educate the general public on mental health issues and resources, and target high-risk individuals. It also includes anti-sigma and suicide prevention campaigns, such as Make it OK.	As offered, often weekly	Category of services	*	*	*	*		Health Promotion & Illness Prevention		
Employability services	An aggregate category that includes many types of services that promote the recovery of people with SMI through work. Vocational rehabilitation and Individual Placement & Supports are examples of employability services.	Dependent on need, often weekly during job search	Category of services	*	*	*	*		Community Services & Supports		DEED, DHS, and employment providers partner to offer assorted employment services.
General Housing	There are a range of different housing models with varying levels of ancillary services provided. The evidence identifies that combining housing with services, such as case management, skills development, and care coordination, are key to improved outcomes. Long-term, Supportive Housing is an example of an evidence-based practice.	Housing is continuous. Length of stay and other services based on the housing model.	Category of services	*	*	*	*		Community Services & Supports	DHS Housing Resources	There are range of housing options that vary in form and function. Many of these services have yet to be evaluated. Certain housing models have been shown effective and are listed under Permanent Supportive Housing.
Minnesota Security Hospital	The Minnesota Security Hospital is a secure residential treatment facility in St. Peter. The facility provides evaluation and therapy for around 350 patients deemed by the courts as mental ill and dangerous.	Ongoing evaluation and treatment	Category of services	*	*	*	*		Inpatient & Residential Treatment	DHS Programs & Services - Direct Care & Treatment	

Service / Practice	Description	Frequency of service	Impact on outcomes	Hospital-ization	Employment	Homeless-ness	Psychiatric symptoms	Source of evidence	Continuum of care category	Additional resources	Voices from the field
Other sets of services and settings in Minnesota's Mental Health Continuum											
Suicide Awareness, Prevention & Support	Crisis resources, prevention training, support groups, and other resources designed to prevent suicide. This includes evidence-based services, such as Question, Persuade, and Refer (QPR) and Applied Suicide Intervention Skills Training. It also includes community level suicide prevention planning.	Dependent on need	Category of services	*	*	*	*		Mental Health Promotion and Illness Prevention	NAMI resources	
Skills Development and Wellness Promotion	This incorporates a wide range of activities designed to promote physical, social, emotional, and mental health wellness. Skills include resiliency training which promotes skills to adapt to setbacks or misfortunes, and can protect individuals from mental health conditions. Local examples include Allina Health's Bounce Back Project, SAMHSA's 10x10, and the PartnerSHIP4Health.	Dependent on need	Category of services	*	*	*	*		Mental Health Promotion and Illness Prevention		

*This research only includes outcomes in hospitalization, employment, homelessness, and psychiatric symptoms verified by WSIPP or NREPP. These two clearinghouses have not reviewed the impact of the service on this outcome.

Impact on outcomes - definitions	
Proven effective	A proven effective service or practice offers a high level of research on effectiveness, determined through multiple qualifying evaluations outside of Minnesota or one or more qualifying local evaluation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Promising	A promising service or practice has some research demonstrating effectiveness, such as a single qualifying evaluation that is not contradicted by other such studies, but does not meet the full criteria for the proven effective designation. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Theory-based	A theory-based service or practice has no research on effectiveness or less rigorous research designs that do not meet the above standards. These services and practices typically have a well-constructed logic model or theory of change. This ranking is neutral. Services may move up to promising or proven effective after research reveals their impact on outcomes.
No effect	A service or practice with no effects has no impact on the desired outcome. It does not include the service's potential effect on other outcomes. Qualifying evaluations use rigorously implemented experimental or quasi-experimental designs.
Category of services	These services represent a category of services that a client may receive, dependent on need. As services can vary from client to client, we cannot assess their effectiveness.

About Results First

A bipartisan provision enacted during the 2015 legislative session instructs Minnesota Management & Budget (MMB) to conduct benefit-cost analyses for corrections and human services, using the Pew-MacArthur Results First framework. The Results First team at MMB partners with agencies and counties to estimate benefit-cost ratios associated with practices that have been rigorously evaluated in Minnesota and elsewhere.

As policymakers face difficult budget choices, knowing which services have proven outcomes that lead to taxpayer savings is valuable. This ability to make informed choices when employing public resources maximizes the benefits to state residents. This inventory provides a central repository of services offered in Minnesota and evidence of their effectiveness.

The adult mental health benefit-cost analysis will be released in late 2016. More information is available on our website: https://mn.gov/mmb/results-first/
The benefit-cost analysis is based on the Washington State Institute for Public Policy (WSIPP) model. The technical appendix is on their website: http://www.wsipp.wa.gov/BenefitCost

Voices from the field column
The Results First team understand that services are complex and quality research exists that may not meet our definitions. We welcome that context and detail. If your organization would like to add a voices from the field comment, email ResultsFirstMN@state.mn.us. The statement must be 180 characters or less, validated by MMB, and attributable to the individual or organization submitting it. It can include links to additional information.

Updated 2/22/2017

Appendix B: Summary of research methods

Inventory of services

In the preparation of this report, we compiled an inventory of all services available in the participating jurisdictions. Appendix A presents this inventory, and it is available on our website (https://mn.gov/mmb/results-first/inventory-of-services/). For each policy area, the inventory lists information about the service description, the oversight agency, treatment components, and the supporting evidence that it produces positive outcomes for individuals with mental health. For adult mental health, we collaborated with four counties. The inventory—and for that matter, the benefit-cost analysis—reflects the experiences of these counties.

Benefit-cost analysis

The Results First benefit-coast analysis relies on the Washington State Institute for Public Policy (WSIPP) Model. The technical documentation is available on their website. Benefit-cost analysis is a tool used to compare policy alternatives to determine which will generate the highest net benefit over time for each dollar invested. The results provide important data on cost-effectiveness, but does not address other important factors in the policy-making process, such as equity. An advantage of using benefit-cost analysis within the same policy area, is the ability to measure costs and outcomes in the same way across different services.

The analysis uses an integrated set of calculations in a computerized model to produce three related summary statistics for each service included in the analysis: a net present value, a benefit-cost ratio, and a measure of risk. Net-present value is the difference between the present value of cash inflows and the present value of cash outflows. The model calculates the net present value of a stream of estimated benefits and costs. The second statistic is the benefit-cost ratio. This ratio indicates how many dollars in benefits to taxpayers and society the state can expect to occur over time, for every dollar spent to fund the service. Finally, the model estimates a measure of risk associated with these estimates.

Benefits from reducing the incidence or symptoms of mental health illness

Benefits included in this analysis are taxpayer benefits and societal benefits. Taxpayer benefits include avoided health care costs. These are marginal health care costs avoided as the result of changes in mental health conditions, such as hospitalization, emergency room visits, office-visits, and pharmacy services. Societal benefits include increased labor market earnings and avoided deaths due to some mental health illnesses. Labor market earnings represent the change in related earnings to the extent that evidence shows current earnings improve when an individual manages their mental illness. This only applies to anxiety disorder, major depressive disorder, PTSD, and SMI. Some mental health disorders

can also lead to premature death. WSIPP modeled mortality-related lost earnings, lost household production, and the value of a statistical life based on the probability of dying from major depressive disorder and SMI.

Costs

Costs represent the direct expense of providing treatment to one additional client, called a marginal cost. The costs represents either one year of service or one cycle of treatment. Often, costs were difficult to ascertain, as the claims database is often unable to stipulate how many treatments a client received. We relied on available evidence, rigorous research, and provider interviews to estimate the cost of the average full cycle or one year of treatment. Each individual profile provides information on how we estimated costs. For more information on cost calculations, contact the Results First team at MMB.

Data quality and limitations

To continue from the inventory of services to the benefit-cost analysis, a service or practice needed to have a similar treatment, duration, frequency, and participant profiles as the empirical research that indicated its level of evidence. The benefit-cost analysis assumes services in the state have an impact comparable to the impact found in research. In cases where they did not meet these requirements or staff articulated a concern for fidelity, the service was not included in the benefit-cost analysis. We did not conduct fieldwork to ensure fidelity of implementation, but rely on professional judgement about services targeting the appropriate population as well as dosage per the treatment design. If fidelity is absent, we will not see the anticipated benefits here in Minnesota.

There are limits to using a statewide benefit-cost ratio since Minnesota experiences many differences between Adult Mental Health Initiative (AMHI) regions and between counties including differences in availability to provide services, and capability to follow evidence-based practices. A generalized state level ratio compares the cost of services across very different situations, and may not be an accurate representation of individual counties.

Many public services are composed of a set of treatments given in concert. This analysis, however, uses individual pieces of research on practices. Because of this, the model cannot estimate the impact of two separate ones taken together. For example, if a person is participating in IMR and a cognitive behavioral therapy service, the analysis will not measure the interaction between them, and if that interaction has any effect on reducing the prevalence or symptoms of mental health illnesses.

Further, we can’t break down results by demographic or socioeconomic characteristics. Since the model, provided by WSIPP, uses a meta-analysis, we can only generalize results by the populations studied in

those evaluations.[31] To calculate results by demographic or socioeconomic status, we would need to have studies which produced measures of impact for those groups. The model is flexible to allow for it, but we do not have those specific evaluations right now to insert in the model.

Prevalence of mental health illnesses in Minnesota

Each service has a measure of impact from previous research, as mentioned above. The model applies this measure of impact (negative or positive) to the diagnosis rate of the baseline cohort (also called baseline prevalence) of each mental health illness using a mathematical equation, which estimates the unit change and new prevalence rate. The change resulting from the reduction or management of symptoms is calculated as the percentage difference between the baseline prevalence and the new prevalence rate in each year. The WSIPP model contains prevalence rates for anxiety disorder, attention-deficit/hyperactivity disorder (ADHD), depression, disruptive behavior, serious mental illness (SMI), and post-traumatic stress disorder (PTSD).

The baseline prevalence for each disorder in the model is a function of the rate of lifetime disorder in the population distributed by the age of onset and adjusted by the rate of recurrence. WSIPP estimated the lifetime disorder and age of onset parameters from national data published in federal databases and scholarly literature. WSIPP used data from life tables published by the national Centers for Disease Control and Prevention (CDC) to estimate persistence rates representing the recurrence of disorders, given the age of onset.

[31] A meta-analysis collects all existing evaluations on the service and calculates an average measure of impact on the distinct outcome.

The epidemiological parameters for the mental health component of the Results First model provide estimates of the current 12-month prevalence of each mental health disorder:

Estimated 12-month prevalence of mental health disorder

	Serious Mental Illness (SMI)	Anxiety disorder	Attention-Deficit/Hyperactivity Disorder (ADHD)	Depression	Disruptive behavior	Post-Traumatic Stress Disorder (PTSD)
Baseline proportion of general population with lifetime disorder	11.1%	31.5%	8.1%	23.2%	9.0%	8.7%

Source: Washington State Institute for Public Policy (WSIPP) and Centers for Disease Control and Prevention (CDC

Calculation of benefits

The differences in percentage points from the baseline prevalence rate to the new prevalence rate are the unit values which the model multiplies by the resource costs to calculate benefits. The WSIPP model includes benefits related to reducing the prevalence rate for anxiety disorder, attention-deficit/hyperactivity disorder (ADHD), depression, disruptive behavior, serious mental illness (SMI), and post-traumatic stress disorder (PTSD). The benefits for all outcomes are based on avoided health care costs or labor market earnings[32].

Avoided health care costs

The model uses data from the Medical Expenditure Panel Survey (MEPS) to estimate the health care costs incurred or avoided with changes in the mental helath disorders in the model. The U.S. Department of Health & Human Services, Agency for Healthcare Research and Quality implements these large-scale surveys to indiviudals and families, doctors, hospitals, pharmacies, and employers who report on health care service utilization and associated medical conditions, costs, and payments (Agency for Healthcare Research and Quality, 2009). Because MEPS only includes information for individuals who sought medical care, WSIPP also included survey data from the Centers for Disease Control and Prevention's National Institute of Health Survey (NHIS) to acount for individuals not seeking treatment. The NHIS provides information about the health of U.S. civilian non-institutionalized individuals in many different

[32] Research for each service includes other outcomes not included in the model. They are not included because they are not monetized in the benefit-cost analysis, but are still important to consider when making budget and policy decisions.

topic areas, including physical and mental health status (Centers for Disease Control and Prevention, 2016).

The model groups health care costs by mental health disorder and measures them as an annual additional cost to the system:

Annual additional cost of each mental health disorder

Annual health care cost	Anxiety disorder	Attention-Deficit/Hyperactivity Disorder (ADHD)	Depression	Disruptive behavior	Post-Traumatic Stress Disorder (PTSD)
Adult	$553	$599	$1,763	$599	$1,763

Source: Washington State Institute for Public Policy (WSIPP)

The annual additional costs for serious mental illness (SMI) split into four separate categories:

Annual additional cost of Serious Mental Illness (SMI)

Adult health care cost	Serious Mental Illness (SMI)
General health care	$2,025
Emergency department	$1,448
Hospital (general)	$15,082
Hospital (psychiatric)	$36,788
Total	$55,343

Source: Washington State Institute for Public Policy (WSIPP)

Labor market earnings, household production and VSL

The WSIPP model computes labor market earnings as a result of mental health morbidity (changes in mental health illness) and mortality (changes in premature death due to the mental health illness) when there is evidence that the linkage is causal. First, the procedure estimates the labor market earnings of an average person with a mental health disorder included in the model. The model uses national earnings data from the Current Population Survey (CPS) to estimate this. The CPS is a monthly survey of households conducted by the Bureau of Census for the Bureau of Labor Statistics. Earnings include benefits, growth rate estimates, and adjustments to the year of the data. The model also displays the change in expected labor market earnings due to mortality. The present value of future labor market earnings at each age is multiplied by the decrease in probability that a person dies as the result of the

disorder given that they have the disorder at that particular age. In addition to lost labor market earnings, analysts sometimes include values of lost household production, valued at labor market rates, in the event of a death. WSIPP's model computes estimates for those lost human capital values using standard present-value procedures. Another approach to monetize the change in mortality risk is computing the value of a statistical life (VSL). VSL measures the total monetary value that people place on reduced risks of death, or the amounts they are willing to accept for increased levels of mortality risk. WSIPP distributes VSL to individual years of a person's life. After computing these values, the model adjusts the VSL by subtracting the separately estimated avoided costs of health care and Social Security if someone dies, the estimated lifetime earnings and household production estimates (described above).

For depression and serious mental illness, the model computes mortality-related lost earnings, lost household production, and the value of a statistical life. The model assumes that depression causes 50% of suicides and SMI causes 25%. The number of suicides, all state deaths and state population are Minnesota specific and come from national and state datasets. The number of suicides in the state comes from the CDC WONDER database. The state population comes from the U.S. Census Bureau. And the number of deaths in the state comes from the Minnesota Department of Health.

Apportion benefits and costs

The Results First Model provides a total benefit-cost ratio that is for all payers (state and federal). For state decision-makers, it is more relevant to show the benefit-cost ratio in terms of the state actors, including counties (hereafter referred to as, state). To do so, we apportioned benefits and costs to federal and state sources.

For costs, we conducted an analysis of state payments on the average adult individual with mental illness that receives Medical Assistance. The state, on average, pays 52 percent of the total cost, and the Federal government pays 58 percent. Unless otherwise noted (like in the case of mobile crisis response where the state/county share is 90 percent), we split the costs using those percentages.

There are three types of taxpayer benefits: health care, criminal justice, and labor income. For health care related benefits, we apportioned in the same terms as the above for cost with the Federal government receiving the majority of benefits. Criminal justice benefits accrued to state taxpayers and to other participants through reductions in victimization. Labor income, less income tax, accrued with other participants. For tax income from labor, the model provides a tax figure, which assumes a total effective tax rate of 31 percent. Of this, state and local is 35 percent of the total percentage and 65 percent is

federal (Washington State Institute for Public Policy, 2016, p. 159). We apportioned tax income in this way.

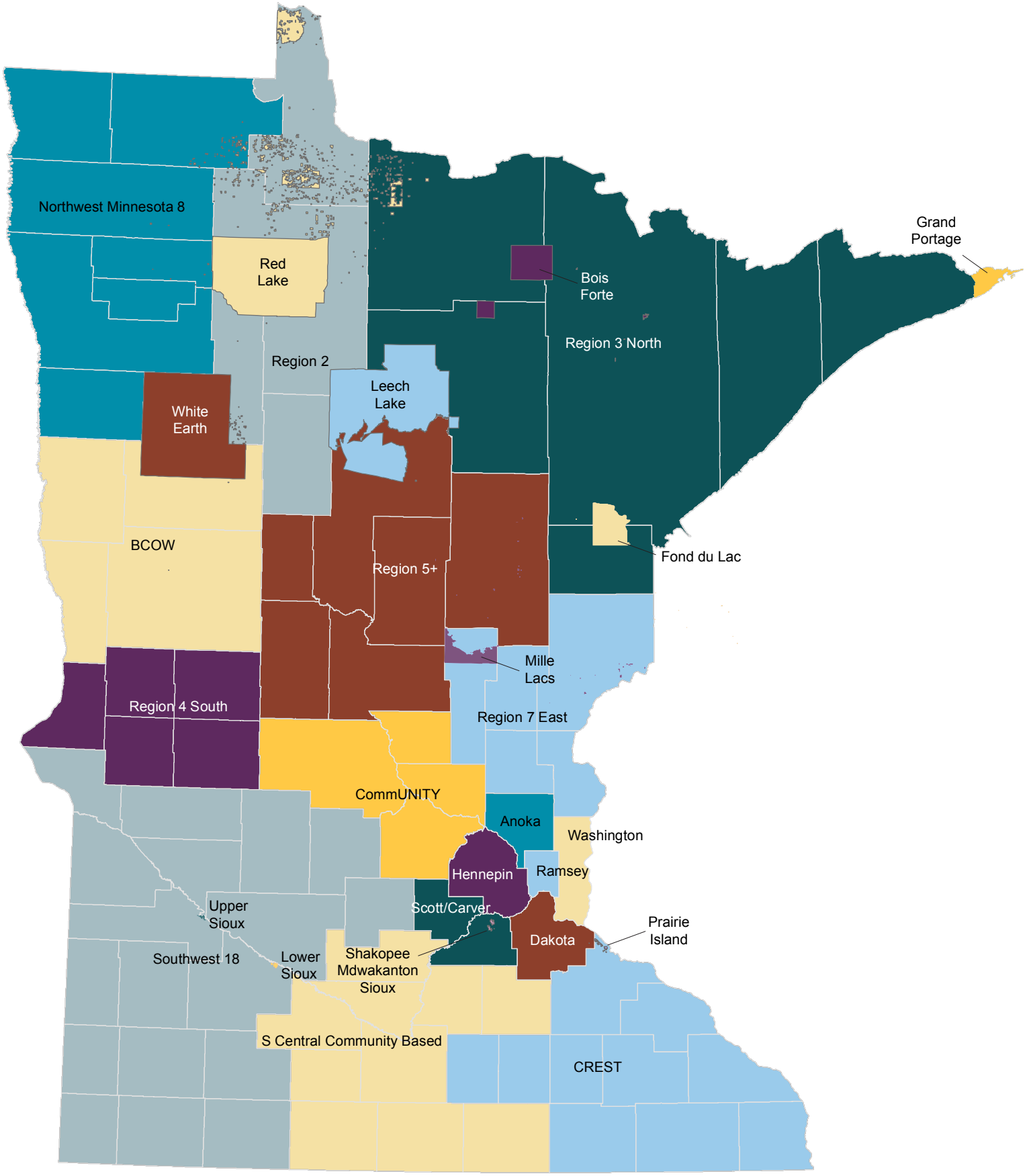
For future analyses, we will revisit two assumptions related to programs participants' earned income. For the present analysis, in both areas we have used the assumptions recommended by our national partners. The first assumption is that, given tight labor markets, a job earned by a program participant would not have otherwise gone to another individual in the state. The second assumption is the proportion of these participants' additional earned income that should be characterized as a benefit to state taxpayers (13%) and federal taxpayers (18%). This assumption may overstate the proportion of the estimated benefits that would accrue to taxpayers versus society more broadly. However, such an overstatement could be offset by other changes associated with additional earned income, including reductions in use of public programs such as health coverage and cash assistance, that we have not assumed occur for purpose of this analysis.

Addressing uncertainty

A benefit-cost ratio is a single-point estimate based on many inputs and assumptions, and there is a significant amount of uncertainty around many of these. If the model inputs vary, the analysis can produce different results. To deal with this uncertainty, the model employs a Monte Carlo simulation method which runs a benefit-cost analysis thousands of times for each service. Each simulation varies inputs randomly after sampling from estimated ranges of uncertainty that surround key inputs and assumptions (Washington State Institute for Public Policy, 2016). The results of the Monte Carlo simulation estimate the chance that a return on investment for that service will at least break even. We did not include this analysis in the report because the Monte Carlo analysis is in terms of the overall benefit-cost ratio (including Federal share) and warrants additional discussion. If you would like to discuss these results contact ResultsFirstMN@State.mn.us.

Appendix C: Adult Mental Health Initiatives (AMHI)

AMHI name	Counties
BCOW	Becker, Clay, Otter Tail, Wilkin
CommUNITY	Sherburne, Benton, Stearns, Wright
CREST	Olmsted, Winona, Fillmore, Goodhue, Houston, Mower, Steele, Dodge, Wabasha, Waseca, Prairie Island Indian Community
Northwest Minnesota 8	Polk, Kittson, Mahnomen, Marshall, Norman, Pennington, Red Lake, Roseau
Region 2	Lake of the Woods, Beltrami, Clearwater, Hubbard
Region 3	Koochiching, Itasca, St. Louis, Carlton, Lake, Cook, Fond du Lac Band of Lake Superior Chippewa, Grand Portage Band of Lake Superior Chippewa, Bois Forte Band of Lake Superior Chippewa
Region 4 South	Grant, Douglas, Pope, Stevens, Traverse
Region 5+	Crow Wing, Aitkin, Cass, Morrison, Todd, Wadena
Region 7 East	Isanti, Chisago, Kanabec, Mille Lacs, Pine
South Central Community Based Initiative (SCCBI)	Blue Earth, Brown, Watonwan, Faribault, Martin, Freeborn, Le Sueur, Nicollet, Rice, Sibley
Southwest 18	Cottonwood, Big Stone, Chippewa, Jackson, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, McLeod, Meeker, Murray, Nobles, Pipestone, Redwood, Renville, Rock, Yellow Medicine
Individual counties/tribes	Hennepin, Dakota, Ramsey, Washington, Anoka, Carver/Scott, White Earth Band of Ojibwe, Leech Lake Band of Ojibwe, Mille Lacs Band of Ojibwe, Lower Sioux Indian Community, Red Lake Band of Chippewa Indians, Shakopee Mdewakanton Sioux (Dakota) Community, Upper Sioux Community


Northwest Minnesota 8
Red Lake
Bois Forte
Grand Portage
Region 3 North
Region 2
Leech Lake
White Earth
BCOW
Region 5+
Fond du Lac
Mille Lacs
Region 4 South
Region 7 East
CommUNITY
Anoka
Washington
Hennepin
Ramsey
Scott/Carver
Upper Sioux
Prairie Island
Dakota
Southwest 18
Lower Sioux
Shakopee Mdwakanton Sioux
S Central Community Based
CREST

Appendix D: Highlights of 2015 legislative changes for adult mental health

Evidence-based services	Description of 2015 legislative change
Behavioral Health Home services (BHH)	$5.3 million (2016-17) and $23.8 million (2018-19) to implement behavioral health home services (BHH), which will coordinate primary and behavioral health care for children and adults with serious emotional disturbance (SED), serious mental illnesses, and serious and persistent mental illnesses. Effective beginning July 1, 2016.
Mobile crisis teams	$8.57 million (2016-2017) appropriated for crisis services to expand mobile teams across the state. Private health plans in Minnesota must cover mental health crisis services defined as an immediate response service available 24-hours, seven days a week for individuals having a psychiatric crisis, mental health crisis or emergency.
Assertive Community Treatment (ACT) teams	$1.3 million (2016-17) and $1.5 million (2018-19) to expand the number of Assertive Community Treatment (ACT) teams and increase quality of services provided. Also creates a forensic ACT team for people involved with the criminal justice system.
Supportive housing	$4.7 million (2016-17) and $6.1 million (2018-19) to expand housing with supports grants over four years to serve 840 adults with serious mental illnesses in permanent supportive housing.
First episode of psychosis treatment	$260,000 (2017) and $685,000 (2018-19) for first episode programs to support and treat individuals experiencing their first psychotic episode. Effective July 1, 2016.
Individual Placement and Support (IPS) Employment	Individual Placement and Support (IPS), a supported employment program for people with mental illness, received an additional $1 million a year to continue the projects that were converted to IPS.
Medication therapy management	Eligibility change: anyone with one or more chronic health care conditions, regardless of the number of medications being taken, is eligible for services. Before the change, an individual needed to be taking three or more medications to be eligible.
Peer specialists	Peer specialists can now be a case manager associate. The commissioner of human services must also study and report how peer specialists are used in the mental health system.

Source: Minnesota Hospital Association, 2015; NAMI Minnesota, 2015

References

Agency for Healthcare Research and Quality. (2009, August 21). *Survey Background*. Retrieved from Medical Expenditure Panel Survey.

al., M. e. (2013). Prevalence of Metabolic Syndrome and Metabolic Abnormalities in Schizophrenia and Related Disorders-A Symstematic Review and Meta-Analysis. *Schizophrenia Bulletin*, 306-318.

APA/CAPP Task Force on SMI and SMD. (2007). *Catalog of Clinical Training Opportunities: Best Practices for Recovery and Improved Outcomes for People with Serious Mental Illness.* Washington, D.C.: American Psychological Association.

Becker, D., Whitley, R., Bailey, E., & Drake, R. (2007). Long-term employment outcomes of supported employment for people with severe mental illness. *Psychiatric Services*, 922-928.

Centers for Disease Control and Prevention. (2016, July). *National Center for Health Statistics*. Retrieved from National Health Interview Survey - Fact Sheet.

Centers for Medicare & Medicaid Services. (2016). *Medicaid Health Homes: An Overview.* CMS.

Colton, C., & Manderscheid, R. (2006). Congruencies in increased mortality rates, years of potential life lost, and causes of death among public mental health clients in eight states. *Prev Chronic Dis*, 1-14.

Community Supports Administration. (2015). *Offenders with Mental Illness.* Saint Paul: Department of Human Services.

Cook, J. A., Copeland, M. E., Floyd, C. B., Jonikas, J. A., Hamilton, M. M., Razzano, L., . . . Boyd, S. (2012). A Randomized Controlled Trial of Effects of Wellness Recovery Action Planning on Depression, Anxiety, and Recovery. *Psychiatric Services, 63*(6), 541-547.

Copeland, M. E. (2015). *WRAP is...* Retrieved from Mental Health Recovery.

Courtney, C. (2014). *Individual Placement and Support (formerly known as EE-SMI).* Saint Paul: Minnesota Department of Employment and Economic Development.

Craig, T., Garety, P. P., Rahaman, N., Colbert, S., Fornells-Ambrojo, M., & Dunn, G. (2004). The Lambeth Early Onset (LEO) Team: Randomised controlled trial of the effectiveness of specialised care for early psychosis. *British Medical Journal*.

Cullberg, J., & et al. (2006). Treatment costs and clinical outcome for first episode schizophrenia patients: a 3-year follow-up of the Swedish 'Parachute Project' and Two Comparison Groups. *Acta Psychiatrica Scandinavica*, 274-281.

Dillon, K., & Thomsen, D. (2016). *Reasons for Delays in Hospital Discharges of Behavioral Health Patients: Results from the Minnesota Hospital Association Mental and Behavioral Health Data Collection Pilot.* Saint Paul: Wilder Research.

Direct Care and Treatment and Chemical and Mental Health Services Administrations. (2014). *Plan for the Anoka Metro Regional Treatment Center.* Saint Paul: Minnesota Department of Human Services.

Drake, R. E., Bond, G. R., Goldman, H. H., Hogan, M. F., & Karakus, M. (2016). Individual Placement And Support Services Boos Employment For People With Serious Mental Illnesses, But Funding Is Lacking. *Health Affairs*, 1098-1105.

Drake, R., Goldman, H., Leff, S., Lehman, F., Dixon, L., Mueser, K., & et al. (2001). Implementing evidence-based practices in routine mental health setting. *Psychiatric Services*, 179-182.

Druss et al. (2010). A randomized trial of medical care management for community mental health settings: the Primary Care Access, Referral, and Evaluation (PCARE) study. *The American Journal of Psychiatry*, 151-9.

Druss et al. (2011). Budget impact and sustainability of medical care management for persons with serious mental illness. *The American Journal of Psychiatry*, 1171-1178.

Druss, B., & Walker, E. (2011). *Mental disorders and medical comorbidity.* The Synthesis Project. Princeton, NJ: Robert Wood Johnson Foundation.

Fardig, R., Lewander, T., Melin, L., & Folke, F. F. (2011). A randomized controlled trial of the illness management and recovery program for persons with schizophrenia. *Psychiatric Services*.

Frese, F., Stanley, J., Kress, K., & Vogel-Scibilia, S. (2001). Integrating evidence-based practices and the recovery model. *Psychiatric Services*, 1462-1468.

Gioia, D., & Dziadosz, G. (2008). Adoption of evidence-based practices in community mental health: A mixed-method study of practitioner experience. *Community Mental Health Journal*, 347-357.

Gladigau et al. (2013). Increased cardiovascular risk in patients with severe mental illness. *Internal Medicine Journal*, 65-69.

Governor's Task Force on Mental Health. (2016a). *Final Report.* Saint Paul: Governor's Task Force on Mental Health. Retrieved from https://mn.gov/dhs/assets/mental-health-task-force-report-2016_tcm1053-263148.pdf

Governor's Task Force on Mental Health. (2016b). *Crisis Formulation Group - Agenda and Formulation Document for 9/26.*

HealthForce Minnesota. (2015). *Gearing Up for Action: Mental Health Workforce Plan for Minnesota.* Rochester: HealthForce Minnesota.

House Research Department. (2015, January). Overview of HHS Policy Committee Jurisdiction.

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century.* Washington, D.C.: National Academy Press.

Jorm, A. (2000). Mental health literacy: Public knowledge and beliefs about mental disorders. *British Journal of Psychiatry*, 396-401.

Killbourne, A., & et al. (2008). Improving Medical and Psychiatric Outcomes Among Individuals With Bipolar Disorder: A Randomized Controlled Trial. *Psychiatric Services*, 760-768.

Larsen, T., & et al. (2001). Shortened duration of untreated first episode of psychosis: changes in patient characteristics at treatment. *American Journal of Psychiatry*, 1917-1919.

Lawrence et al. (2013). The gap in life expectancy from preventable physical illness in psychiatric patients in Western Austrailia: retrospective analysis of population based registers. *BMJ*, 1-14.

Levitt, A., Mueser, K., DeGenova, J., Lorenzo, J., Bradford-Watt, D., Barbosa, A., . . . Chernick, M. (2009). Randomized Controlled Trial of Illness. *Psychiatric Services*, 1629-1636.

Lyden, T. (2016, February 19). Violent criminals mixed with mentally ill patients at Anoka Treatment Center.

Mangurian et al. (2013). Primary Care Providers' Views on Metabolic Monitoring of Outpatients Taking Antipsychotic Medication. *Psychiatric Services*, 597-599.

McHugo, G. J., Drake, R. E., Whitley, R., Bond, G. R., Campbell, K., Rapp, C. A., & et al. (2007). Fidelity outcomes in the National Evidence-Based Practices Project. *Psychiatric Services*, 1279-1284.

Melchert, T. P. (2015). Biopsychosocial Practice: A science-based framework for behavioral health care. In T. P. Melchert, *Outcomes assessment* (pp. 235-253). Washington, D.C.: American Psychological Association.

Mental Health Division. (2016). *Use of Certified Peer Specialists.* Saint Paul: Minnesota Department of Human Services.

Meyer-Kalos, P. (2016, September). IMR in Minnesota Minnesota. (W. Merrick, Interviewer)

Minnesota Council of Health Care Plans. (2016a). *Minnesota Health Plans*. Retrieved from Market Basics.

Minnesota Council of Health Care Plans. (2016b). *Minnesota Health Care Plans*. Retrieved from Why are premiums going up? Where does the money go?

Minnesota Council of Health Care Plans. (2016c). *Minnesota Health Care Plans*. Retrieved from $58.1 million spent each day on care.

Minnesota Council of Health Plans. (2014, December). Minnesota Health Plans' Collaboration Plan, 2015-2019. St. Paul, Minnesota.

Minnesota Department of Health. (2014). *Advancing Health Equity: Report to the Legislature.* Saint Paul: Minnesota Department of Health.

Minnesota Department of Human Services. (2010). *Minnesota Assertive Community Treatment Standards.* Retrieved from MHCP Provider Manual.

Minnesota Department of Human Services. (2014). *Chapter 3: Public Mental Health Delivery System*. Retrieved from Minnesota Online Mental Health Services Manual For Adult and Children's Mental Health.

Minnesota Department of Human Services. (2015). *Social Services Expenditure and Grant Reconciliation Report (SEAGR).* Saint Paul.

Minnesota Department of Human Services. (2015). *State Operated Services Cost of Care Rates as of July 1, 2015.* St. Paul. Retrieved from http://www.dhs.state.mn.us/main/groups/publications/documents/pub/dhs16_195265.pdf

Minnesota Department of Human Services. (2016). *Direct Care and Treatment Cost of Care Rates.* St. Paul. Retrieved from http://www.dhs.state.mn.us/main/groups/publications/documents/pub/dhs-287957.pdf

Minnesota Department of Human Services. (2016). *Use of Certified Peer Specialists.* Mental Health Division, St. Paul. Retrieved from https://mn.gov/dhs/assets/use_of_certified_peer_specialists_tcm1053-166402.pdf

Minnesota Department of Human Services. (2016a). *Agency Profile.* Saint Paul: State of Minnesota.

Minnesota Department of Human Services. (2016b). *Programs and services*. Retrieved from Minnesota Department of Human Services.

Minnesota Health Access Survey. (2015). Health Economics Program. Minnesota Department of Health.

Minnesota Health Care Plans. (2016a). Getting insurance, getting care. Retrieved from http://mnhealthplans.org/market-basics/access-to-coverage-care-shifts/

Minnesota Hospital Association. (2015). *Mental & Behavioral Health: Options & Opportunities for Minnesota.* Minnesota Hospital Association.

Moulton, S., & Sandfort, J. (2015). From Fidelity to Fit: Enabling Successful Interventions in Complex Implementation Systems. *Presentation at the APPAM Annual Meeting.* Miami.

NAMI Minnesota. (2010). *Mental Health Crisis Planning.* Saint Paul: NAMI Minnesota.

NAMI Minnesota. (2014). *Hope for Recovery: Minnesota's Adult Mental Health Resource Guide.* Saint Paul: National Alliance on Mental Illness Minnesota.

NAMI Minnesota. (2015). *2015 Minnesota Legislative Session: Summary of New Laws Affecting Children and Adults with Mental Illnesses and Their Families.* Saint Paul: NAMI Minnesota.

New Freedom Commission on Mental Health. (2003). *Achieving the Promise: Transforming Mental Health Care in America.* Rockville, MD: DHHS.

Office of Rural Health and Primary Care. (2013). *Minnesota's Psychiatrist Workforce, 2012.* Saint Paul: Minnesota Department of Health.

Office of the Assistant Secretary for Planning and Evaluation. (2011). *Federal Financing of Supported Employment and Customized Employment for People with Mental Illness: Final Report.* U.S. Department of Health and Human Services.

Office of the Legislative Auditor. (2016). *Mental Health Services in County Jails.* Saint Paul.

Osborn et al. (2006). Risk for coronary heart disease in people with severe mental illness. *British Journal of Psychiatry*, 271-277.

Perez-Pinar et al. (2016). Cardiovascular risk factors among patients with schizophrenia, bipolar, depressive, anxiety, and personality disorders. *European Psychiatry*, 8-15.

Petersen, L., Jeppesen, P., Thorup, A., Abel, M.-B., Ohlensclaeger, J., Christensen, T. O., & Nordentoft, M. (2005). A randomised multicentre trial of integrated versus standard treatment for patients with a first episode of psychotic illness. *British Medical Journal*, 602-605.

Rowan, K., McAlpine, D., & Blewett, L. (2013). Access and Cost Barriers to Mental Health Care by Insurance Status, 1999 to 2010. *Health Affairs (Project Hope)*, 1723-1730.

Ruggeri, M., Bonetto, C., Lasalvia, A., Fioritti, A., de Girolamo, G., & Santonastaso, P. (2015). Feasibility and effectiveness of a multi-element psychosocial intervention for first-episode psychosis: Results from the cluster-randomized controlled. *Schizophrenia Bulletin*, 1192-1203.

Salyers, M., Becker, D., Drake, R., Torrey, W., & Wyzik, P. (2004). A ten-year follow-up of supported employment. *Psychiatric Services*, 302-308.

SAMHSA. (2009). *Practitioner Guides and Handouts: Illness Management and Recovery.* Center for Mental Health Services. Rockville, MD: U.S. Department of Health and Human Services. Retrieved October 2016

SAMHSA. (2010). *Illness Management and Recovery Evidence-Based Practices (EBP) KIT.* Center for Mental Health Services. U.S. Department of Health and Human Services.

SAMHSA. (2014). *Crisis Services: Effectiveness, Cost-Effectiveness, and Funding Strategies.* Rockville: Office of Policy, Planning, and Innovation, Substance Abuse and Mental Health Services Administration.

SAMHSA. (2015). *Risk and Protective Factors*. Retrieved November 2016, from Substance Abuse and Mental Health Services (SAMHSA).

Saxena, Jane-Llopis, & Hosman. (2006). Prevention of mental and behavioral disorders: implications for policy and practice. *World Psychiatry*, 5-14.

Sledge, W., Lawless, M., Sells, D., Wieland, M., O'Connell, M., & Davidson, L. (2011). Effectiveness of peer support in reducing readmissions of persons with multiple psychiatric hospitalizations. *Psychiatric Services*, 541-544.

Srihari, V. T., & Ozkan, B. (2015). First-episode services for psychotic disorders in the U.S. public sector: A pragmatic randomized controlled trial. *Psychiatric Services*, 705-712.

Studer, L. (2016, November 1). E-mail communication.

Trangle et al. (2010). Minnesota 10 by 10. Reducing morbidity and mortality in people with serious mental illnesses. *Minnesota Medicine*, 38-41.

TransparencyMN. (2016, November 28). *State Budgets*. Retrieved from TransparencyMN: http://warehouse.swift.state.mn.us/analytics/saw.dll?Dashboard

Vancampfort et al. (2013). Metabolic Syndrome and Metabolic Abnormalities in Bipolar Disorder: A Meta-Analysis of Prevalence Rates and Moderators. *American Journal of Psychiatry*, 265-274.

Viron et al. (2014). Behavioral Health Homes: An opportunity to address healthcare inequities in people with serious mental illness. *Asian Journal of Psychiatry*, 10-16.

Washington State Insitute of Public Policy. (2014). *Wellness Recovery Action Plan*. Retrieved from WSIPP: http://www.wsipp.wa.gov/BenefitCost/Program/495

Washington State Institute for Public Policy. (2016). *Benefit-Cost Technical Documentation.* Olympia, WA: Author. Retrieved from http://www.wsipp.wa.gov/TechnicalDocumentation/WsippBenefitCostTechnicalDocumentation.pdf

Weiss, M., Bloom, H., & Brock, T. (2014). A Conceptual Framework for Studying the Sources of Variation in Program Effects. *Journal of Policy Analysis and Management*, 778-808.

Wilder Research. (2015). *DHS Gap Analysis Study: Chapter 5.* Saint Paul: Minnesota Department of Human Services.

Wright, A., & et al. (2006). Development and evaluation of a youth mental health community awareness campaign - The Compass Strategy. *BMC Public Health*.

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