

EXECUTIVE SUMMARY

What is the relationship between behavioral health and physical healthcare utilization, and what kind of impact might treatment have on physical healthcare costs?

In fiscal year 2017, there were 62,486 Multnomah County Health Share members who had full coverage for the entire year¹. Dual diagnosis clients--those with co-occurring substance use and mental health diagnoses--had the highest average physical healthcare costs, followed by clients with only substance use disorders, followed by mental health, and followed by those with no noted diagnoses in these categories.² **For all three behavioral health groups, average physical healthcare costs declined significantly if treatment encounters were also present; for dual diagnosis and SUD members, those reductions offset the cost of treatment and generated additional savings.** This is especially impressive given that treatment was defined as simply having at least one approved behavioral health encounter³, at any level of care. In the future, looking at treatment dosage's relationship to impacting costs would also be enlightening.

African-American members were significantly more likely to have higher expenditures, as were older adults and English speakers. These bring up interesting questions of health disparities versus access disparities--**are costs higher for any of these groups because they have greater healthcare needs or because they have better access?** These are very different possibilities worth further analysis.

We also briefly looked at how behavioral health costs may compare to other chronic or high-acuity conditions. A comparison with HIV, diabetes, and heart disease/heart failure showed **substance use outranks both HIV and diabetes in terms of total average costs per member for the year.** Pairing treated and untreated groups in future study could be illuminating as well--e.g., comparing treated and untreated mental illness to managed and not managed diabetes.

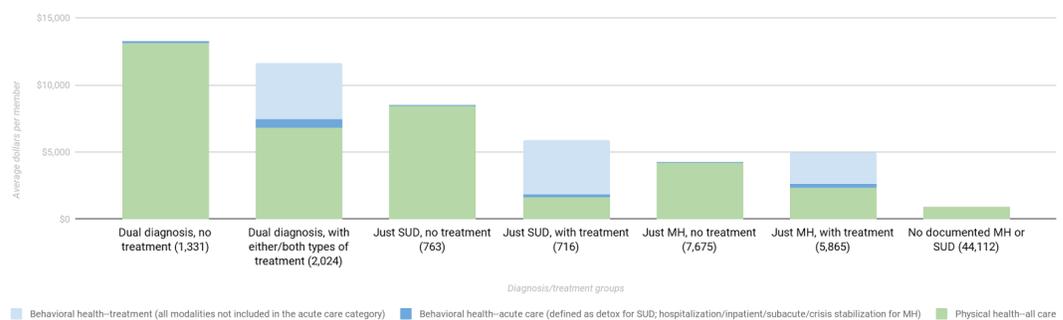
BY THE NUMBERS

Nearly 8% of members had a recorded substance use disorder; of those, 36% had at least one treatment encounter at some point during the year. Alcohol was the most prevalent diagnosis (39%), followed closely by opioids (37%).⁴ Close to three quarters of those with a substance use disorder also had a recorded mental health diagnosis at some point in the year. Overall, about 27% had a recorded mental health diagnosis, and 44% of those had at least one treatment encounter at some point during the year.

Of the top 50 "spenders" in physical health, 50% had a diagnosed substance use disorder, but only 2 people had gone to any kind of treatment during that time. 64% had a diagnosed mental health disorder, but only 6 people had accessed any treatment during that time. For comparison, **these 50 individuals had nearly \$13.6 million in physical healthcare claims paid, but less than \$24,000 in behavioral health payments.** Information like this reminds us that there is more than one possible connection between physical and behavioral health: to what extent behavioral health drives up physical healthcare costs or to what extent those with severe health conditions experience behavioral health issues as a result of their suffering with that condition?

For every behavioral health category, **the presence of some kind of treatment significantly decreased physical healthcare costs,** and even when adding in the cost of treatment and acute care, there were cost reductions for both dual diagnosis and SUD clients. An important consideration is that this is only an observation of a 12-month

Average per-member costs, by diagnosis and treatment groups (count of members)
July 2016 to June 2017



¹ To ensure we were comparing 'apples to apples' and not missing any information, we only included members with Multnomah HSO eligibility for the entire year. We used approved claims to generate costs, with adjustments for slot and case rate funding models.

² 35% of members had no costs in either physical or behavioral healthcare. We cannot know anything about these clients or their conditions, and have to assume in these models that neither substance use or mental health disorders are present.

³ Excluding hospitalization/inpatient/subacute/crisis stabilization (mental health) and detox (SUD), which were included elsewhere as behavioral acute care costs.

⁴ Note that anywhere a single substance is mentioned, it may be a sole disorder, or coexisting with other substance use disorders.

period of co-occurring treatment and physical healthcare costs. It is possible that there may be long-term effects that make mental health investment also cost-effective in total, but we need more data to test that hypothesis. The opposite is also possible: that the effect may wear off over time. As time progresses, we will be able to better address these questions with more comprehensive analyses.

WHAT ELSE MIGHT IMPACT COST?

We also looked at the statistical impacts⁵ of behavioral health diagnoses and treatment on physical healthcare costs while controlling for sex, race, age, and primary language.

Behavioral health diagnoses, and subsequent treatment, found to be significantly connected to physical healthcare costs. The starkest example is dual diagnosis clients, whose physical healthcare costs were over \$9,400 lower if they had received treatment during this time. Taking into account that treatment costs, combined with acute care, averaged at approximately \$4,150 per client, this is still a large cost reduction. Shifting the financial investment to behavioral health may therefore provide larger cost savings to Health Share overall.

Projected average health expenditures increased for African-Americans while decreasing for Caucasians. Speaking English as one's primary language also correlated with significant cost increases. The difficulty with these types of trends is assessing need versus access--does someone who utilizes more *need* it more than others, or have better *access* than others? These point to two very different types of health-related disparities.

Multivariate approach: total annual physical healthcare costs	
Variable	Projected impact on costs
Diagnosis and treatment	
SUD without treatment	Increased by \$4,889
SUD with treatment	Increased by \$413
MH without treatment	Increased by \$3,250
MH with treatment	Increased by \$1,281
Dual diagnosis without treatment	Increased by \$11,717
Dual diagnosis with treatment	Increased by \$2,312
Demographics	
Sex	
Female	(insignificant result)
Language	
English	Increased by \$292
Race	
African-American	Increased by \$662
Asian	(insignificant result)
Caucasian	Decreased by \$125
Hispanic	(insignificant result)
Native American	(insignificant result)
Pacific Islander	(insignificant result)
Other (omitted)	---
Age	
Under 12 (omitted)	---
12 to 17	Decreased by \$362
18 to 29	(insignificant result)
30 to 39	Decreased by \$235
40 to 49	(insignificant result)
50 to 59	Increased by \$1,192
60 and over	(insignificant result)

Diagnosis	Average PPM
Mental health--all diagnoses	\$4,581
HIV	\$5,955
Diabetes	\$6,949
Substance use--all diagnoses	\$8,047
Opioid use disorder	\$8,905
Alcohol use disorder	\$8,753
Heart disease/heart failure	\$12,230

HOW DOES BEHAVIORAL HEALTH COMPARE TO OTHER CHRONIC OR HIGH-ACUITY CONDITIONS?

For a simple comparison, we selected three conditions--diabetes, human immunodeficiency virus (HIV), and heart disease/heart failure--and looked at members who had diagnoses in one or more of these categories at some point in the year. Substance use represented higher per-member spending than both HIV and diabetes, although lower than heart disease. Comorbidities must also be considered; for example, those with substance use disorders *and* HIV averaged \$12,686 for the year--\$14,281 if one then included mental health as well. Those with both diabetes and heart disease averaged \$15,003 per member. Coexisting conditions like these can substantially increase healthcare costs, and it is helpful to examine where chronic illness intersects with behavioral health.⁶

FUTURE ANALYSES

1. More stratification by type of care (e.g., outpatient versus residential) and treatment dosage (differentiating between number of encounters, not just whether any encounter happened).
2. Further examination of health disparities.
3. Longitudinal analysis of the relationship between physical healthcare costs and behavioral health diagnoses/treatment--the pre- and post-approach with control groups, examination of long-term impacts (if any) on expenditures, lagged effects, and so forth.

FURTHER INFORMATION

For questions or for more information, contact:

Shannon M. Campbell, MPP; shannon.campbell@multco.us

Senior Research & Evaluation Analyst, Multnomah County Mental Health & Addiction Services Division

⁵ OLS (ordinary least squares) regression; post-estimation included variance inflation factors and Ramsey RESET; weighted effect coding used for dummy variables; included active members with zero costs for the year. While this affects the assumed normal distribution of the data under many standard statistical models, it is commonly accepted in public health that these models are still valid on large datasets, such as this one. Additionally, robust standard errors were used to help counteract heteroskedasticity. All variables shown in the table were significant at the 90% confidence level or better, and the model as a whole was significant at the 99% confidence level (prob > F = 0.0000).

⁶ It is important to reiterate that the only method we have of identifying a member as possessing certain health conditions is via claims data, which infers that they have had at least one encounter that identified this diagnosis. There may be individuals struggling with behavioral or physical health conditions who have not accessed any medical care, or who have but are yet to be formally diagnosed.