



GDAHA
Greater Dayton Area Hospital Association

one morning

The Economic Impact of Behavioral Health in the Greater Dayton Region

EXECUTIVE SUMMARY

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I. Abstract

This study calculated comprehensive estimates of all economic impacts of mental illness within the Dayton, Ohio, Region for 2023. Every cost area within each pathway through which mental illness generates economic impacts was estimated for the Region. This was accomplished by using pre-existing per capita estimates from similar regions and using economic cost analysis methods to adjust the estimates to the Dayton Region.

The dollar values of the economic impacts were categorized into three distinct impact types: Impact on the Region's GDP (\$12.65 billion); spending directed to mental health care and physical health care (3.25 billion); to the community impacts of mental illness (177.65 million); and the economic value of the quality-of-life impact of premature deaths resulting from mental illness (\$13.92 billion).

II. Introduction

Estimates of all the impacts that mental illness has on society provide a valuable perspective of the magnitude of those impacts as well as of the component parts of the total impact. Additionally, the estimates provide a glimpse into the benefits society stands to gain from reductions in the prevalence of mental illness.

This study provides an estimate for the Dayton Region, defined herein as the 11 counties served by the Greater Dayton Hospital Association (GDAHA).ⁱ With a population of 1,818,795, the Dayton Region's GDP was \$134.7 billion, amounting to \$74,071 per capita in 2023.

There are many pathways through which mental illness generates economic impacts within any region. In addition to mental health care, mental illness increases instances of physical illness, crime, homelessness, unemployment, premature death, and unpaid home care by family or friends tending to those who have serious mental illness. On top of that, mental illness reduces workplace productivity and educational attainment.

For each of these pathways, there are between one and three types of economic impacts. These impact types differ in how they affect society:

1. Lost economic output (GDP) from reduced employment and reduced workplace productivity. This is the negative impact of mental illness on the size of the region's economy and therefore on household incomes within the region.
2. Expenditures and other dollar costs attributable to mental illness for health care, criminal justice, and homelessness. This is the impact mental illness has on

spending allocations, toward these spending categories, and simultaneously redirected from other uses.

3. The value of quality-of-life losses suffered due to premature deaths caused by mental illness. These losses are not evident in the form of lower economic production or changes in spending priorities, unlike the first two impact types. Instead, these losses are a monetized measure of the intangible value of lives lost prematurely.

The sums of each of these impact types across all the pathways through which mental illness impacts society yield the three totals listed in the Abstract above.

For most impacts, no estimates exist for the Dayton Region. Measuring these impacts from primary sources within the Dayton Region would be excessively time-consuming and costly for this study. The basic approach to calculating estimates of impacts not already available for the region was to use pre-existing data and estimates of impacts from other areas with demographic and socioeconomic characteristics analogous to those of the Dayton Region. These were adjusted for remaining differences by calculating the per capita values of the estimates for the demographic and socioeconomic subgroups that differed from the Dayton Region. After multiplying the per capita values by the relevant subgroup population sizes for the Dayton region, estimates were generated that aligned as closely as possible with the characteristics of the Dayton Region. Aside from the total population, the demographic and socioeconomic characteristics of Ohio are very similar to those of the 11-county area that comprises the Dayton Region for this study.

The details regarding the calculations of all component estimates of the total economic impact of mental illness in the Dayton Region are presented in the full study.

Among the factors that most significantly contribute to the economic impacts of mental illness are the levels of mental illness throughout the population. As is standard, the population suffering from mental illness is separated into two categories: those suffering from Serious Mental Illness (SMI) and those suffering from Other Mental Illness (OMI). Simple definitions of these two categories are that SMI is disabling (schizophrenia, bipolar disorder, major depression, etc.), while OMI is not (adjustment disorders, mild anxiety, mild obsessive thoughts, etc.). While the population suffering from SMI is smaller than that suffering from OMI, the impacts of SMI are greater.

For perspective, the estimated prevalence of Mental Illness in the Dayton Region in 2023 was:

- 340,334 adults and 76,168 juveniles over the age of 4 (approximately 24.2% of the region's population) suffered from some form of mental illness (MI)
- 79,613 adults (5.7% of the Dayton Region's adults) suffered from SMI, and 31,347 juveniles (9.7% of the Dayton Region's juveniles) suffered from SMI
- The prevalence of mental illness in the Dayton Region is moderately higher than across the nation and essentially the same as for all of Ohio.

III. Summary of the Estimates

Mental Health Care Spending

Spending on mental health care is of the second type of impact listed above. Spending on mental health care is of the second type of impact listed above. The estimates were calculated by obtaining the per-adult and per-juvenile averages of mental health care expenditures attributable to mental illness for Ohio in 2023 and multiplying them by the respective populations of the same age groups for the Dayton Region. ⁱⁱ

- \$2.92 billion - Total mental health care expenditures in the Dayton Regionⁱⁱⁱ

Physical Health Care Spending Attributed to Mental Illness

Mental illness can result in physical illnesses or injuries that require health care. Examples of physical illnesses that are commonly linked to mental illness are heart disease, diabetes, respiratory illness, digestive difficulties, chronic pain, and sleep disturbances. Individuals who have a mental illness are more likely to become injured due to increased periods of inattention (decreased focus) while exposed to increased injury risk at work, at home, or while driving.

As with mental health care, the estimate for the Dayton Region was based on statewide health care expenditure averages in Ohio, which were then adjusted for the adult and juvenile demographics in the Dayton Region.

- \$330.26 million - Total physical health care costs attributable to MI in the Dayton Region^{iv}

Non-suicide Premature Deaths Attributed to Mental Illness via Accidents and Physical Illness

In addition to physical health care spending, the higher prevalence of physical illness and injuries experienced by those with mental illness also results in a higher percentage of early deaths among the population with mental illness relative to the general population.

Premature deaths have two of the economic impact types: lost economic output due to the reduction of the workforce and the loss of quality of life to those who benefited from the presence of individuals whose lives were shortened by mental illness. The lost output impact is estimated as the present discounted value of the average remaining lifetime earnings forgone due to the premature death. Median annual earnings for workers in the Dayton Region are used as the basis for this calculation.

To briefly describe the quality-of-life impacts, note that they are not directly observed, as are the other two impact types (economic production and expenditures). Nonetheless, the value of years of life lost to premature deaths is measurable based on observed human behavior. There are multiple methods for calculating the average value of a lost life, known as the Value of Statistical Life (VSL). They are all based on observed decisions by many individuals regarding their willingness to pay for products or product features that reduce the risk of suffering a premature death or their willingness to accept a higher income for a job that carries an increased risk of premature death. These observations reveal the VSL.^v For example, if on average people are willing to pay an extra \$400 for vehicle safety features that reduce their fatal crash risk by 1 in 30,000 per year, this value of a slight fatality risk is converted to the value of avoiding death with certainty by multiplying \$400 by 30,000, which is \$12,000,000.

This study uses the average of the VSLs produced by the U.S. federal agencies that assess the risks of death.^{vi} The VSLs developed by these federal agencies were estimated using extensive analyses of primary data. The number of non-suicide premature deaths in the Dayton Region was estimated based on existing 2023 per capita state (Ohio) and national estimates.

\$12.17 billion – Total impact of 2023 non-suicide premature deaths caused by MI on the Dayton Region

- \$1.57 billion – Impact of these non-suicide deaths on the region's economic output (GDP)
- \$10.60 billion – Impact of the non-suicide deaths on the quality of life for individuals directly impacted by the deaths

Premature Deaths by Suicide

The number of suicides that occurred in 2023 was recorded by county coroner's offices and reported to the State of Ohio. The estimated impacts are of the same two types as with non-suicide early deaths (lost production and lost VSL). The only difference in approach is that separate estimates were gathered for juveniles and adults due to the higher number of suicides than mental illness-induced accidental deaths among juveniles.

\$3.61 billion – Total impact of 2023 suicides on the Dayton Region

- \$293.96 million – Impact of suicides on the region's economic output (GDP)
- \$3.32 billion – Impact of suicides on the quality of life for individuals directly impacted by suicide

Homelessness

Individuals with MI are more likely to become homeless than the general population. The economic impact of homelessness attributed to mental illness consists of spending to house, feed, and provide other basic care, as well as the lost production from the mentally ill homeless population who are unemployed.

The Dayton Region's total homeless population in 2023 was recorded at the county level by an annual national homeless census. The percentage of homeless individuals in the region who are suffering from mental illness is estimated using the state-level estimate of that percentage.

\$55.01 million - Total economic cost of homelessness in the Dayton Region

- \$7.52 million - Annual cost of care for the Dayton Region's homeless population with MI
- \$16.19 million - Health care spending for the region's mentally ill homeless population^{vii}
- \$31.30 million - Lost production (GDP) by the Dayton Region's homeless population with MI who do not participate in the workforce

Criminal Justice Impacts

The MI population commits crimes and becomes incarcerated at higher rates than the general population. The economic impact of crimes attributed to mental illness consists of the costs of crimes to victims and spending on incarceration (both of which are of the second impact type), as well as lost production by those with mental illness who become incarcerated in the criminal justice system.

The average daily populations of county and city jails in the Dayton Region in 2023 were gathered by the State of Ohio. Estimates of the number of the Dayton Region's mentally ill residents incarcerated in the state's penitentiary system, the total cost of their crimes to victims, the cost of their incarceration, and the economic production that the region lost from having residents outside of the labor force who are incarcerated and suffering from mental illness are based on a mix of local, state, and national data and prior estimates. The summary impacts below represent the combined totals for adult and juvenile crimes related to mental illness. The full report provides separate sets of estimates for adult and juvenile crimes.

\$295.45 million - Total criminal justice impact of mental illness for the Dayton Region

- \$39.75 million - Victims' impact of crimes committed by mentally ill inmates
- \$114.19 million - Spending on housing and physical health care for the Dayton Region's incarcerated population with MI
- \$13.43 - Mental health care spending for the Dayton Region's incarcerated population with MI
- \$128.08 million - Lost production (GDP) by the Dayton Region's incarcerated population with MI who cannot participate in the workforce

Unpaid caregiving by family or friends for mentally ill individuals

The impact of unpaid caregiving for the mentally ill populations consists of the production forgone by caregivers who must reduce or eliminate their availability for work, as well as the health care spending resulting from injuries incurred while performing caregiving.

The estimate of this factor is based on a preexisting estimate of the average annual hours of unpaid care provided per individual suffering from SMI.

- \$1.8 billion - Total economic cost of unpaid caregiving in the Dayton Region through lost production (GDP) from family and volunteers who give up work to provide care.

Employment

In addition to nonparticipation in the labor force due to incarceration and homelessness, a very high proportion of adults with mental illness are either unable to work, are unsuccessful at becoming employed, or have difficulty remaining employed.

The estimated additional number of people not employed due to MI within the Dayton Region is based on preexisting estimates for the State of Ohio for both the SMI and OMI populations.

- \$6.57 billion – Total lost production (GDP) in the Dayton Region resulting from unemployment and nonparticipation in the labor force attributable to mental illness.

Diminished Workplace Productivity

Absenteeism refers to the number of hours a worker is absent from work for any reason, and presenteeism refers to the number of hours of production that occur when employees are at work but not fully productive. All workers have absences and incidents of presenteeism, but workers with MI have, on average, higher numbers of hours of absenteeism and presenteeism than those without mental illness. This resulted in reduced economic production for the Dayton Region.

The estimated additional number of hours lost to absenteeism and presenteeism due to MI suffered by employees in the Dayton Region is based on preexisting estimates determined in other locations, which are applied to the area.

- \$644.91 million – Total lost production (GDP) in the Dayton Region resulting from absenteeism and presenteeism attributable to mental illness.

Education

Those with MI, on average, end their education earlier than others. Lower educational attainment results in reduced production per worker, on average, which in turn leads to lower economic output for the Dayton Region.

The number of dropouts from high school, community college, and four-year college among residents in the Dayton Region with MI above that would have been expected without MI are, respectively: 414 additional high school dropouts, 1,075 additional community college dropouts, and 891 additional 4-year college dropouts in 2023.

The impact of individuals ending their educations earlier than they otherwise would have appears in the form of reduced productivity.

- \$1.62 billion - Total economic impact of mental illness on workforce development
 - \$46.65 million - Value of education lost due to excess K-12 student absences caused by mental illness
 - \$1.57 billion - Total negative production impact of student mental illness on the Dayton Region due to additional dropouts from educational institutions.

IV. Core Conclusions

The economic impacts of mental illness on society are numerous. In addition to spending on mental health care, they include impacts on physical health, including early deaths, on suicides, on homelessness and crime, on family and friends who provide care to those in need, on employment and workplace productivity, and on educational attainment. These pathways through which society is impacted result in impacts that can be categorized into three categories. First is the lost economic output that resulted in a lower total income level for the Dayton Region, most of which is due to serious mental illness. Second are the economic expenditures that were triggered by the impact of mental illness on the above pathways, such as health care, homelessness, and crime, and that are reallocated from other purposes. Third is the quality-of-life impact suffered by those who benefited from the presence in their lives of individuals whose lives are cut short by mental illness.

This study estimates that the economic impact of mental illness on the Dayton Region in 2023, by category, was:

- \$12.65 billion – Negative impact on the Region’s GDP (more than 9% of the Region’s total GDP).
- \$3.25 billion – Spending directed to mental health care and physical health care, including for the homeless and incarcerated populations.
- \$177.65 million - Impact on non-healthcare community costs.
- 3.92 billion – The economic value of the quality-of-life impact of premature deaths resulting from mental illness

These economic impacts, while significant, present an opportunity for economic gains that could be realized with reductions in the prevalence of mental illness. A strategic effort to reduce mental illness and its impacts in a cost-effective manner will necessarily focus on early diagnosis and intervention. An approach that leverages the strengths of multiple sectors will include: New employer efforts to achieve productivity and profit gains through mental health-focused initiatives; increased prioritization of mental health prevention, early diagnosis, and intervention in the public sector; and support for integrating mental health, healthcare, education, business, government, and other relevant organizations to the best effect for reducing mental illness and its impacts in the Dayton Region.

ⁱ Auglaize, Butler, Champaign, Clark, Darke, Greene, Miami, Montgomery, Preble, Shelby, and Warren counties.

ⁱⁱ For all estimates presented in this Executive Summary, details regarding the data and pre-existing estimates used, as well as the calculations of the final estimates are presented in the full paper.

ⁱⁱⁱ Estimate includes mental health expenditures for incarcerated residents from the Dayton Region. Mental health care expenditures for the mentally ill homeless population are included in the reported health care costs and could not be separated.

^{iv} Estimate includes physical health care costs attributed to mental illness for the homeless population (see endnote 3). Physical health care costs attributable to mental illness for prisoners could not be separated and are included in prison housing costs.

^v The most common method is to use labor market pay differentials. For example, suppose one occupation pays \$60,000 annually and has a 1 in 20,000 annual risk of suffering an on-the-job fatality while a second occupation pays \$55,000 annually and has a 1 in 22,000 annual risk of suffering an on-the-job fatality and is the same as the first occupation in every other way. The \$5,000 lower pay is income that workers are willing to accept for the 1 in 2,000 lower annual risk of death. This observed lower pay results from a greater willingness by workers to work in jobs with lower fatality risks, for which the supply of workers is greater.

^{vi} These agencies are the U.S. Department of Transportation (DOT), the Environmental Protection Agency (EPA), the Federal Emergency Management Agency (FEMA), and the U.S. Department of Health and Human Services (HHS).

^{vii} Already included in total health care expenses above.