

Economic Burden of Major Depressive Disorder in the United States in 2019-2020: A Societal Perspective

#EE480

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Introduction

- The economic burden of major depressive disorder (MDD) in the United States (US) has increased substantially over time, with an estimated incremental burden among adults in the US rising from \$236 billion in 2010 to \$326 billion in 2018 (2020 USD)¹
- The COVID-19 pandemic has had a large impact on the daily functioning of US society and concerns around the impact on mental health and specifically depressive symptoms have been widespread²

Objective

- To provide a comprehensive evaluation of the incremental economic burden of MDD in the US in 2019 and estimate the potential impact of more effective rapid therapies and the early impact of the COVID-19 pandemic on the overall incremental economic burden

Methods

- A prevalence-based and human capital approach was applied using an estimated annual prevalence of MDD in the US in 2019 proxied from the National Survey on Drug Use and Health (NSDUH) prevalence of individuals with a major depressive episode in the previous year
- Incremental costs (2019 USD) were evaluated from a societal perspective by gender and severity of MDD, where available, and included the following mutually exclusive cost components:
 - Healthcare costs
 - Indirect costs (unemployment, absenteeism, presenteeism, disability, mortality, household-related [i.e., impact of living with an adult with MDD on adults without MDD])
- Cost inputs were derived from previously published literature
- The following two scenarios were simulated to estimate the change in the economic burden of MDD based on the 2019 estimate:
 - The impact of a novel therapy was estimated using a hypothetical rate of early response (≥50% improvement in Hamilton Depression Rating Scale, 17 items) of 40%, 60%, and 80% as compared to the current standard of care rate of early response of 20%⁴, assuming 100% market penetration
 - The impact of the COVID-19 pandemic was estimated using the change in MDD severity distribution in Ettman, 2020³ and the previously published literature estimates for the prevalence of MDD during the COVID-19 pandemic shown in **Table 1**

Table 1. Prevalence of MDD during the COVID-19 Pandemic

Source	MDD Prevalence	Method
NSDUH 2020*	8.4%	Nationally representative survey asking if the respondent experienced an MDE in the past 12 months
Johns Hopkins COVID-19 Civic Life and Public Health Survey ⁵	13.6%	NORC’s AmeriSpeak Panel measuring symptoms of serious psychological distress in the past 30 days (Kessler-6 scale); April 7 - April 13, 2020

*Given the differences in data collection periods and other methodological procedures between NSDUH 2019 and NSDUH 2020, caution should be used when attempting to compare NSDUH 2020 results to other years.

Results

MDD Population in 2019

- Based on NSDUH, 2019 estimates, there were approximately **19.8M adults with MDD in the US in 2019**; of which, 62.7% were female and 67.1% had moderate MDD symptoms (**Table 2**)

Table 2. MDD Population in 2019

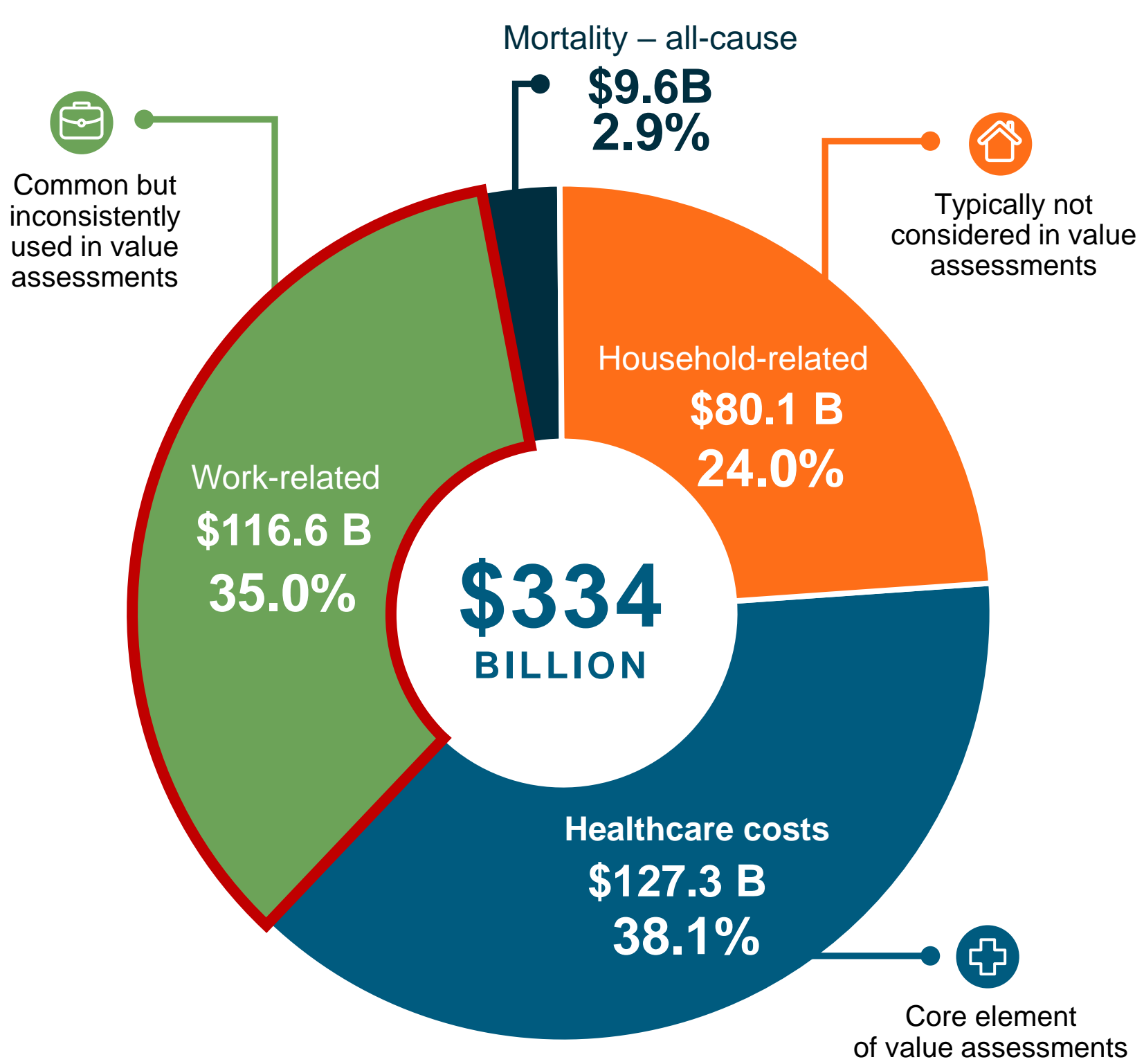
	2019 Estimate
Prevalence of MDD in the US population¹	7.8%
Prevalence of MDD in females	9.6%
Prevalence of MDD in males	6.1%
Severity of MDD in the US population²	
Moderate	67.1%
Severe	32.9%

1. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2019). National Survey on Drug Use and Health 2019 Retrieved from <https://datafiles.samhsa.gov/>
2. Ettman et al., 2020. Prevalence of Depression Symptoms in US Adults Before and During the COVID-19 Pandemic. JAMA Netw Open. 2020;3(9):e2019686.

Economic Burden of MDD in 2019

- The total incremental economic burden of MDD in 2019 was estimated at **\$333.7 B**, of which, **61.9% was associated with indirect costs (Figure 1)**

Figure 1. Estimated Economic Burden of MDD in 2019



Economic Burden of MDD in 2019 – By Cost Component

- The incremental economic burden of MDD by cost component is shown in **Figure 2**

Figure 2. Components of the Economic Burden of MDD in 2019

	Total	Per adult with MDD
Healthcare costs	\$127.3B	\$6,429
Household-related	\$80.1B	\$4,048
Presenteeism	\$43.3B	\$2,188
Absenteeism	\$38.4B	\$1,940
Unemployment	\$30.3B	\$1,530
Mortality – all-cause	\$9.6B	\$485
Disability	\$4.6 B	\$232

Economic Burden of MDD – Work Productivity

- Work-related costs (i.e., unemployment, absenteeism, presenteeism, disability) accounted for **35.0%** of the incremental burden of MDD, with productive-loss accounting for the equivalent of 2M full-time employees not contributing to the workforce per year (**Figure 3**)

Figure 3. Productivity Loss

- Approximately 1 in 13 adults in the workforce (12M adults) have MDD
- Due to MDD, these employees missed work in excess of:

1.7 work weeks per year due to not wanting to be there	2.3 work weeks per year due to illness/injury	4.6 work weeks per year due to not working when at work
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- Taken together, this is equivalent to an excess loss of **2 million full-time employees not contributing to the workforce per year**

Economic burden of MDD – Novel Therapy

- When simulating the impact of a novel therapy, testing a change in the rate of early response from 20% in the current standard of care to a hypothetical rate of 40%, 60%, and 80%, the resulting reduction in the economic burden of MDD in 2019 was 5.1% (\$316.5 B), 10.2% (\$299.5 B), and 15.3% (\$282.5 B), respectively (**Table 3**)

Table 3. Estimated Economic Burden of MDD in 2019 with a Hypothetical Novel Therapy

Simulated rate of early response	40%	60%	80%
Estimated economic burden of MDD in 2019	\$316.5 B	\$299.5 B	\$282.5 B

Economic burden of MDD – COVID-19 Pandemic (2020)

- When using a conservative estimate from NSDUH, 2020 of a prevalence of MDD of 8.4%, the **total incremental burden of MDD in 2020 was estimated to be \$375.4 B**, which is an increase of \$41.8 billion (12.5%) compared to 2019
 - The increase in the economic burden in 2020 was driven by the increase in prevalence (92.8%), the update in the cost inputs (4.8%), and the shift in the severity of MDD (2.4%)
- Alternative prevalence estimates resulted in an estimated economic burden of \$614.0 B in 2020 (**Table 4**)

Table 4. Estimated Economic Burden of MDD in 2020

	NSDUH 2020	Johns Hopkins 2020
Estimated prevalence of MDD during COVID-19 (2020)	8.4%	13.6%
Estimated number of adults with MDD	21.1M	34.2M
Estimated economic burden of MDD in 2020	\$375.4 B	\$614.0 B

Conclusions

The economic burden of MDD in 2019 was driven by healthcare costs (38.1%), work-related costs (35.0%), and household-related cost (24.0%). Common frameworks for value assessment for a novel therapy may ignore the indirect, or hidden, cost components of MDD, which may underestimate the sizeable burden

Scenarios demonstrate the potential impact of more effective rapid therapies and the COVID-19 pandemic on the burden of MDD, highlighting the need to improve MDD management. Future research is warranted to further understand how more effective MDD management may impact the burden as well as to isolate the impact of the pandemic from ongoing upwards trends in the prevalence of MDD

Abbreviations

COVID-19: Coronavirus Disease 2019; MDD: major depressive disorder; NSDUH: National Survey on Drug Use and Health; US: United States; USD: United States Dollars

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