

Estimating Impact of Delayed Treatment for Major Depressive Disorder Using a Continuous-Time Patient-Level Simulation Model

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INTRODUCTION

The Center for Innovation & Value Research (the Center) developed an open-source value model evaluating treatment pathways for major depressive disorder (MDD), with guidance from a 20-member multi-stakeholder advisory group.

Real-world evidence indicates that most patients treated for MDD typically cycle through different selective serotonin reuptake inhibitors (SSRIs) following initial diagnoses, but also that many remain untreated.

OBJECTIVE

To examine clinical and economic outcomes, costs, and cost-effectiveness of a treatment pathway comprised of SSRI monotherapies through four lines of therapy vs. no treatment, for adults (aged 18-64) newly diagnosed with MDD in the United States.

METHODS

The open-source Center Value Model simulates patients to estimate clinical and economic outcomes for different pathways.

The model includes three health states: non-response, partial response, and complete response (CR).

Two treatment pathways were modeled over a 5-year time horizon: no active treatment vs. four lines of treatment with differing SSRI monotherapy in each.



Clinical outcomes include % achieving remission, time to CR, duration of remission, and quality-adjusted life years (QALYs) gained.

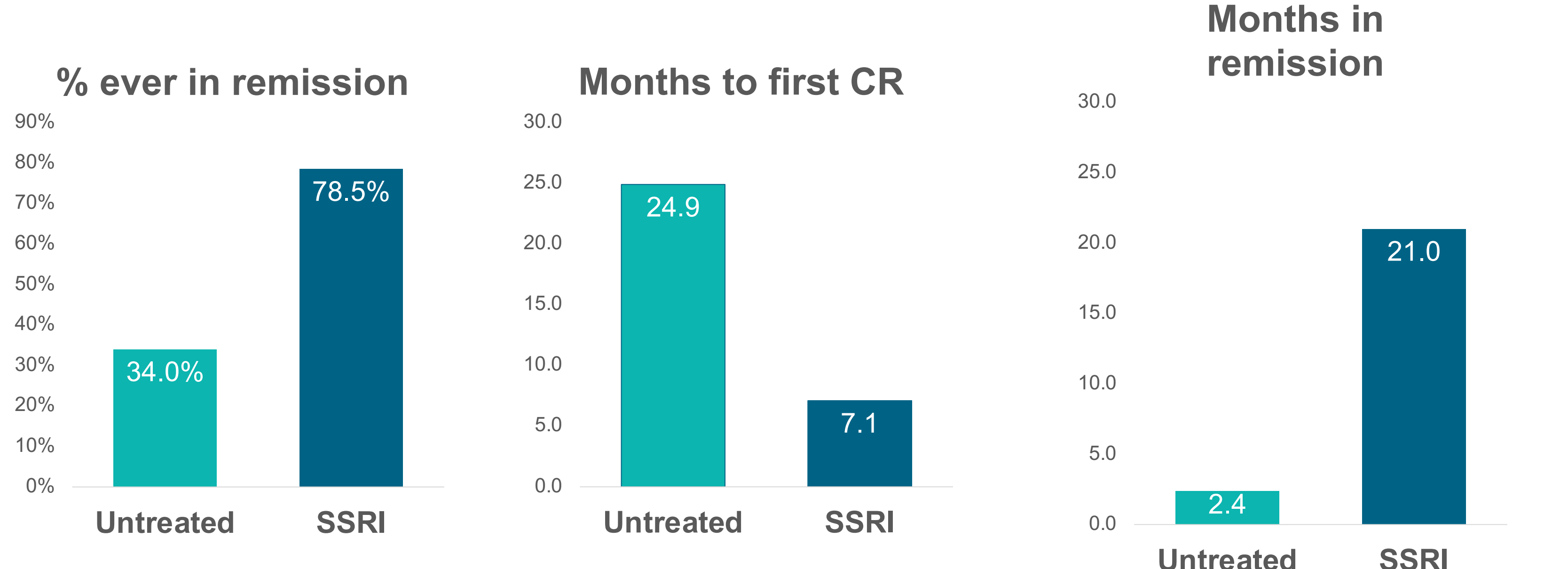
Cost outcomes include healthcare costs, productivity loss, and total societal costs.

Costs and QALYs were discounted at 3% annually.

RESULTS

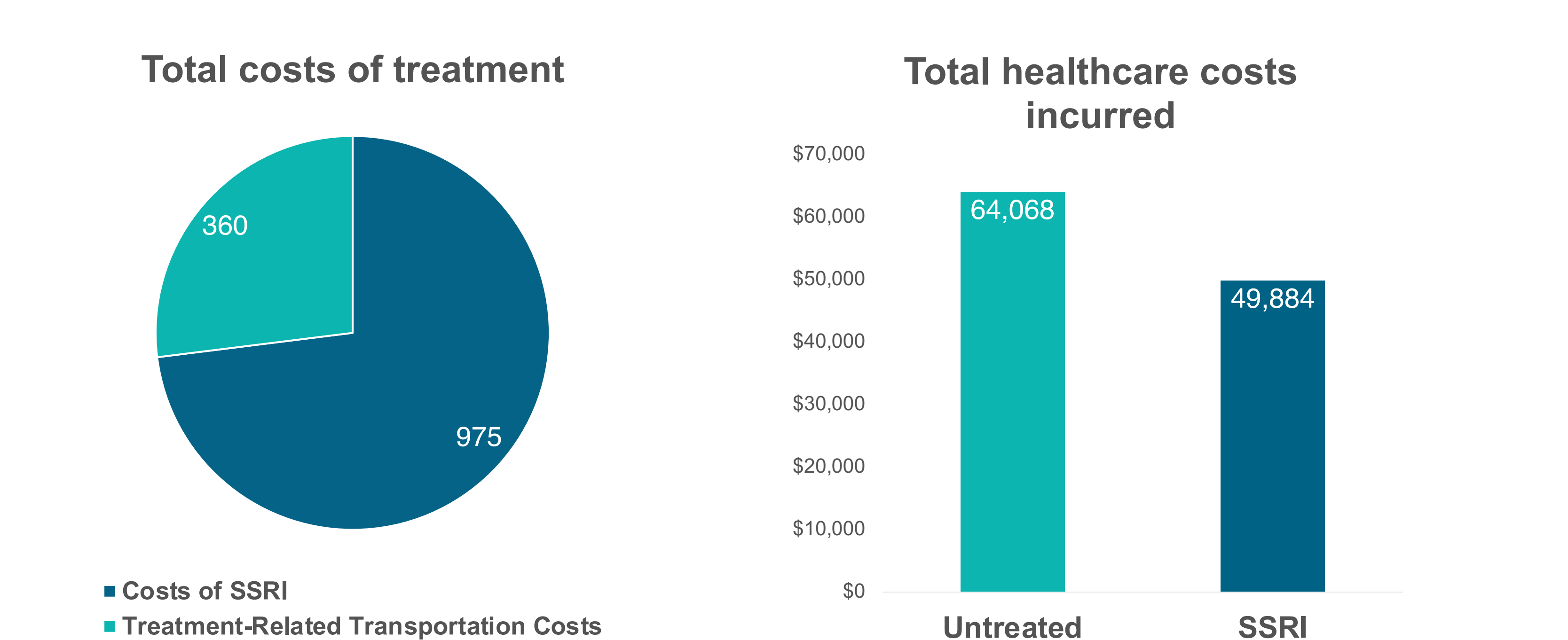
Compared with untreated individuals, treated individuals (Figure 1) were more likely to achieve remission (78.5% vs. 34.0%), achieved first CR more quickly (7.1 vs 24.9 months), and spent more time in remission (21.0 vs. 2.4 months), resulting in higher QALYs over 5 years (2.78 vs. 1.93).

Figure 1. Clinical Outcomes for SSRI Pathway vs. No Active Treatment



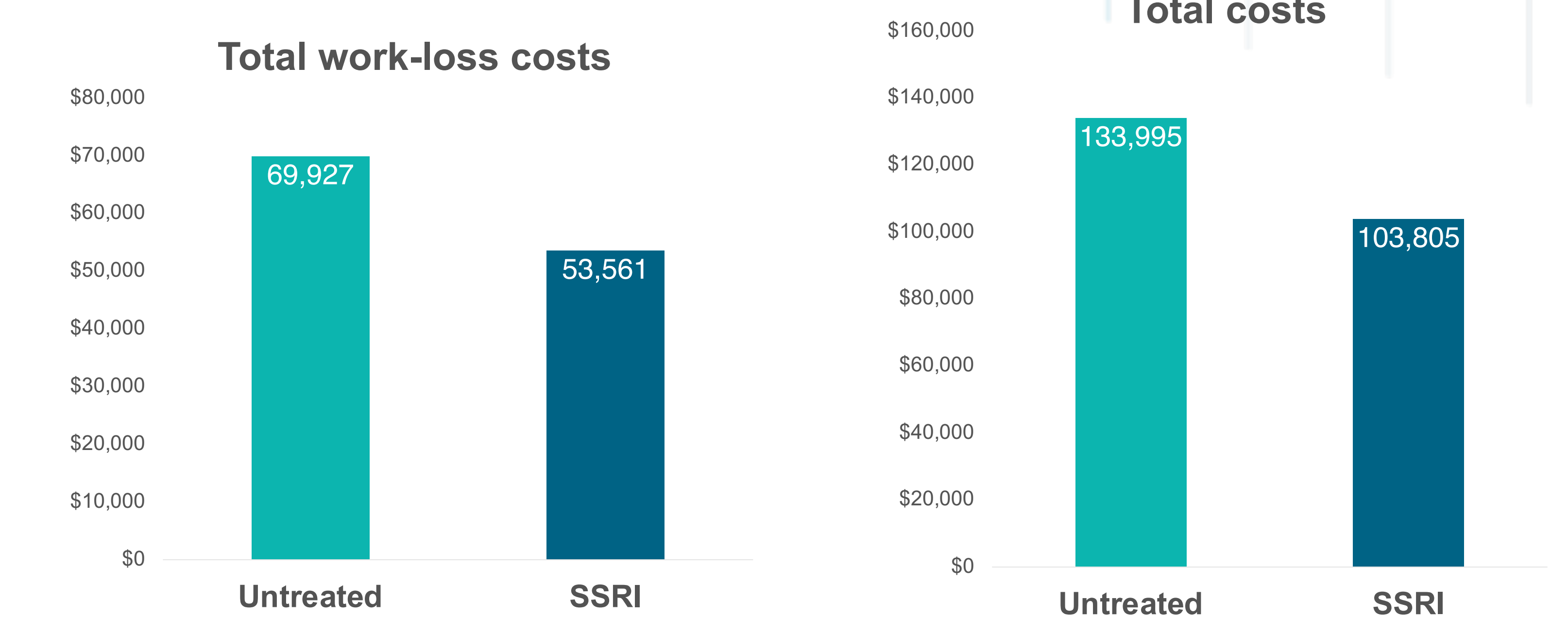
Despite higher treatment costs, average healthcare costs were lower for SSRI-treated individuals (\$48,909 vs. \$64,068) (Figure 2).

Figure 2. Treatment and Total Healthcare Costs for SSRI Pathway vs. No Active Treatment



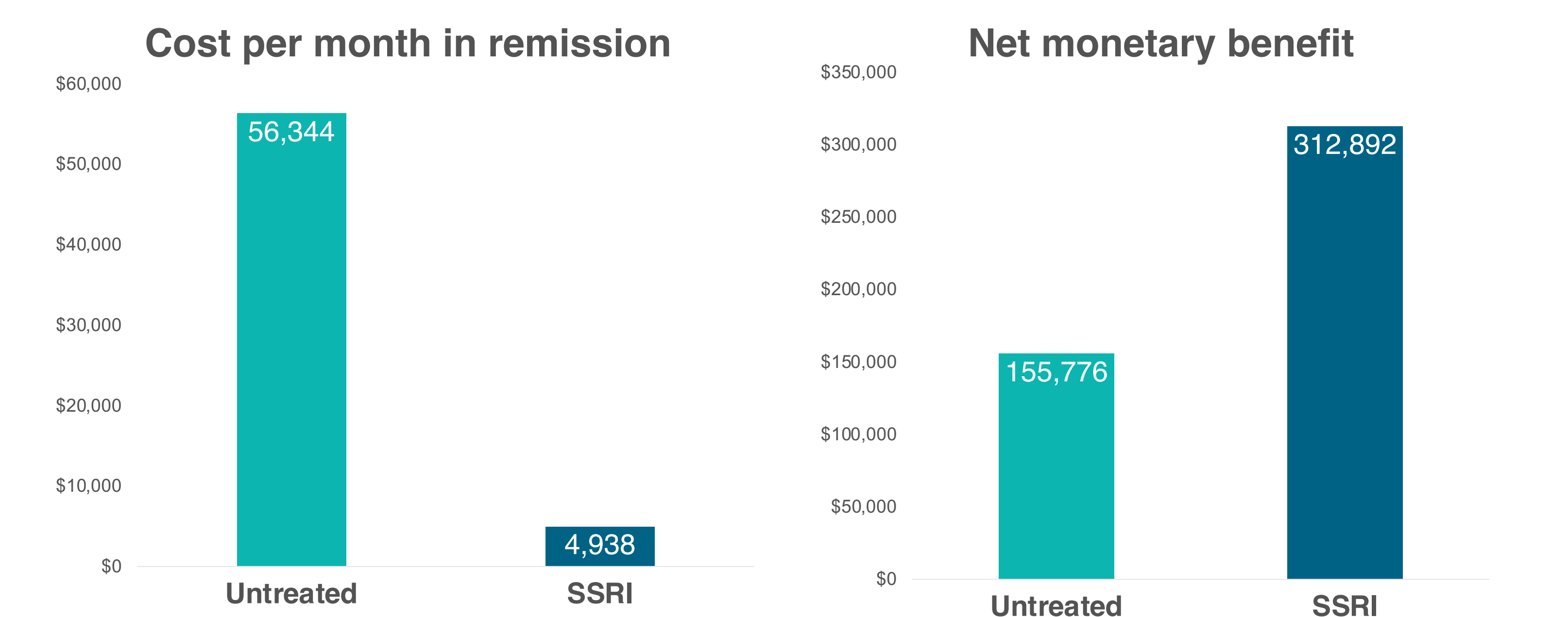
Estimated productivity loss was lower for SSRI-treated individuals than for untreated (\$53,561 vs. \$69,927). Overall, average total healthcare, productivity, and transportation costs over 5 years were an estimated \$103,803 for SSRI-treated vs. \$133,995 for untreated individuals (Figure 3).

Figure 3. Productivity Impacts and Total Costs for SSRI Pathway vs. No Active Treatment



Estimated cost per month in remission was \$4,938 for SSRI treatments and \$56,344 for untreated. Net monetary benefit, calculated as \$150,000 per QALY times QALYs gained minus costs, was estimated as \$312,892 for SSRI treatment vs. \$157,776 for no active treatment.

Figure 4. Clinical Outcomes for SSRI Pathway vs. No Active Treatment



CONCLUSION

Treating patients with SSRIs is estimated to be cost-saving relative to no treatment.

The Center's MDD economic model is a customizable open-source decision tool with multiple outcomes for evaluating MDD treatment modalities.

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