

# RESEARCH BRIEF

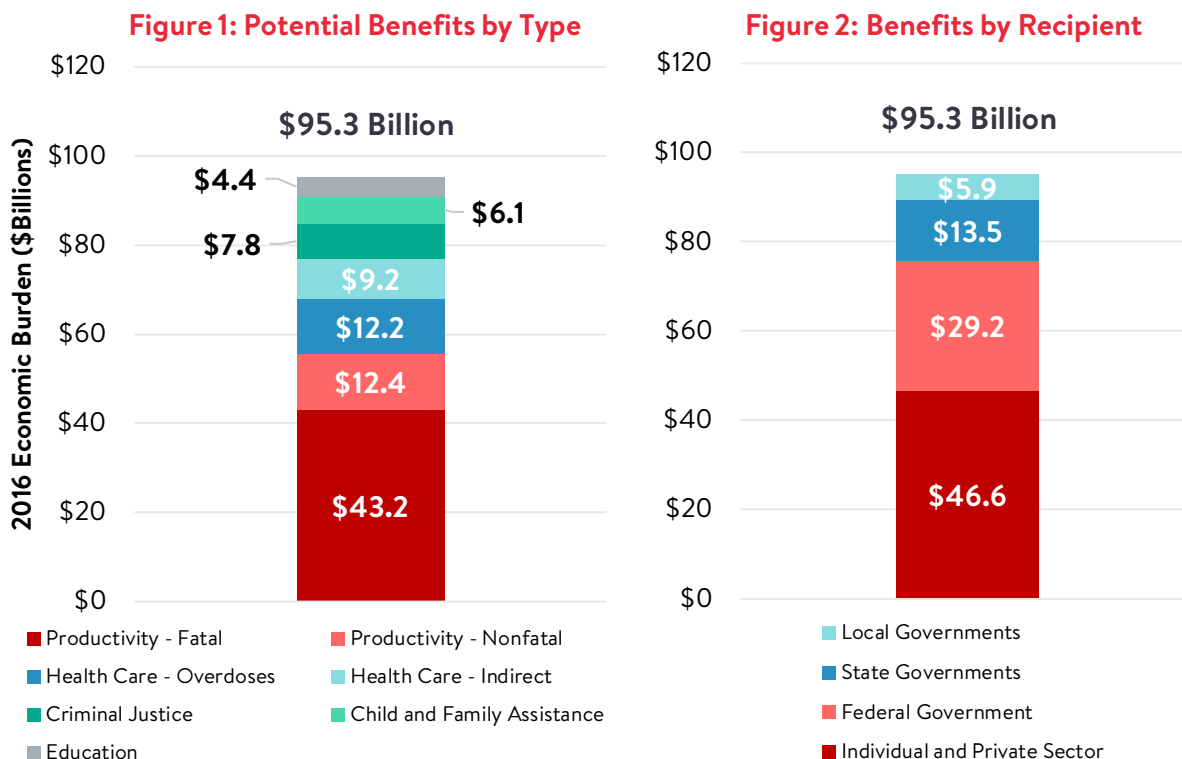
## THE POTENTIAL SOCIETAL BENEFIT OF ELIMINATING OPIOID OVERDOSES, DEATHS, AND SUBSTANCE USE DISORDERS EXCEEDS \$95 BILLION PER YEAR

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### EXECUTIVE SUMMARY

The negative impacts of the opioid epidemic are substantial and increasing rapidly over time. No part of society—including households, governments, and the private sector—is safe from the devastation brought on by this national crisis. The human toll of the combined misuse of prescription opioids, heroin, fentanyl, and related drugs has reached an unthinkable scale, with deaths soaring to more than 53,000 in 2016. Through this analysis of 2016 data, we estimate the magnitude of the economic and quantifiable societal harms and find the potential benefit of preventing opioid overdoses, deaths, and substance use disorders in 2016 would have exceeded \$95 billion dollars—and preliminary data for 2017 predict this estimate will increase. This finding calls for substantial increases in funding at all levels—private and public sectors—to prevent opioid misuse and provide treatment for those affected.

The potential benefits of eliminating the epidemic are concentrated in productivity gains from saved lives and reductions in substance use, averted health care costs due to fewer overdoses and other health complications, and lower spending on other services currently addressing the burden of opioids like law enforcement and child/family assistance (see Figure 1). These benefits—including savings to governments and increases in economic returns to households and the private sector (see Figure 2)—would accrue to all of society.





## DETAILED RESULTS

### Productivity Impacts

Altarum measured lost wages and productivity for three circumstances: overdose fatalities, non-fatal productivity decreases associated with substance use disorders, and lost productivity as a result of incarceration. These impacts are apportioned between individuals/private sector, lost federal tax revenues, and lost state and local tax revenues (see Table 1).

**Table 1. Lost Earnings and Productivity (in billions)**

Event	Individual and Private Sector Losses	Lost Federal Tax Revenues	Lost State Tax Revenues	Lost Local Tax Revenues
Overdose Fatalities	\$31.1	\$8.2	\$2.2	\$1.7
Incarceration	\$0.9	\$0.2	\$0.1	\$0.1
Nonfatal Productivity	\$8.1	\$2.1	\$0.6	\$0.4
<b>Total</b>	<b>\$40.0</b>	<b>\$10.6</b>	<b>\$2.8</b>	<b>\$2.2</b>

*Some columns do not sum to totals due to rounding*

The potential benefits of eliminating the epidemic are concentrated in productivity gains from saved lives due to the large future productivity losses per death (estimated at nearly \$800,000 given the average age for an overdose fatality is age 41). The average lost productivity per death and number of deaths has increased substantially due to the epidemic transitioning away from overdoses in older populations using prescription opioid pills towards overdoses in younger users of illicit drugs like heroin and fentanyl. Given projected future federal income, state, and local income tax rates, we find that much of the lost productivity incidence is in the individual and private sector, but we also find significant annual losses in federal and state/local tax receipts. Early estimates of 2017 overdose fatalities indicate these losses will likely increase (driven substantially by fentanyl-related overdoses) as new data become available.

### Health Care Costs

Increased health care costs associated with opioid use, misuse, and overdoses are measured for two distinct negative impacts and apportioned by payer (see Table 2). The first impacts are costs associated with overdoses resulting in emergency room visits and subsequent hospital admissions. These costs estimate the expenditures required to treat and stabilize a patient after an overdose and any associated ambulance and Naloxone use required.

**Table 2. Increased Health Care Costs (in billions)**

Cost	Private/Uninsured	Medicaid	Medicare
Overdose Costs	\$3.7	\$5.0	\$3.5
Indirect Costs	\$2.6	\$3.7	\$2.9
<b>Total</b>	<b>\$6.3</b>	<b>\$8.7</b>	<b>\$6.4</b>

*Some columns do not sum to totals due to rounding*



We estimate these costs by payer based on the primary insurer for each visit. Due to demographic and regional characteristics of the opioid crisis and overdoses, Medicaid pays for a much larger proportion of overdose costs compared to the percentage of the population it covers. Since Medicaid expansion in 2014, the number of overdoses connected to uninsured patients has fallen substantially, with much of the burden picked up by Medicaid. As a result, these associated costs are a significant component of state impacts of the opioid crisis, in addition to lost state tax revenues.

Indirect medical costs are the costs associated with the increased risk and treatment for diseases related to illicit drug use such as hepatitis B and C, HIV, tuberculosis, and cases of neonatal abstinence syndrome. We estimate these costs based on the risk of infection, multiplied by the cost to treat each condition and apportioned by payer based on the incidence of overdoses.

### Criminal Justice, Child and Family Assistance, Education

The remaining costs, criminal justice expenditures, child and family assistance, and education expenditures are costs associated with increased need for or difficulty in providing public services as a result of the opioid epidemic. For example, many of 2016 cases of child neglect are associated with parents with an opioid substance use disorder, causing increased child and family assistance spending of \$6.1 billion per year. We estimate additional education expenses to be \$4.4 billion per year.

Criminal justice expenditures include costs of associated with police protection, judicial and legal services, corrections, and property losses (seen in Table 3). These costs are connected to the increased burden from direct opioid-related calls and also that the threat of opioids makes routine tasks (for example, executing search warrants) more dangerous and difficult.

**Table 3. Increased Criminal Justice Costs (in billions)**

	Police Protection	Judicial and Legal	Corrections and Incarceration	Property Losses
Annual Cost	\$2.9	\$1.3	\$3.3	\$0.3

### Non-monetized Impacts

This quantitative analysis of the potential economic benefits from eliminating the opioid epidemic is not an exhaustive or comprehensive calculation of the harms caused by opioid use and abuse in the US during 2016. In fact, we are aware of other potentially significant costs of opioid use that could not be monetized, for example, decreased quality of life; emotional burdens of use and related to the loss of loved ones; and other disparate community impacts, such as decreased property values, loss of perceived community well-being and safety, and downstream impacts on the children of parents with an substance use disorder. Additionally, the implicit value of lives lost are not included in this analysis separately from future lost productivity. These negative impacts would only add to the estimated economic burden reported here and are by no means less significant than those we quantify.



## ESTIMATION METHODOLOGY

We estimated the potential economic benefits of eliminating the opioid epidemic in 2016 from two categories of impacts. The first are reductions in *direct costs* of public and private expenditures currently spent to mitigate or respond to opioid-related harms, for example law enforcement costs. The second type of benefits measured are *recovered economic benefits* that were not realized as a result of opioids, such as lost earnings from cases of opioid substance use disorders and related deaths. Research methods are consistent with previously published academic work, costs are estimated in constant 2016 dollars, and all future benefits are discounted at a 3 percent discount rate. Details on data sources and methods by category are below:

Productivity Gains—Averted Deaths: We found the total number of deaths associated with opioid overdoses for 2016 using Centers for Disease Control and Prevention (CDC) [Provisional Drug Overdose Death Counts](#) and the age distribution of these 2016 deaths is approximated using 2015 results from [CDC Multiple Cause of Death](#) data. We calculated the total estimate of lost future earnings by combining the deaths per age with data from Altarum’s [Value of Health Tool](#) and the [American Community Survey](#) 2015 estimates. All future earnings are discounted at a three percent discount rate and assume one percent real earnings growth over time.

Productivity Gains—Non-Fatal: We estimated the lost productivity associated with substance use disorders using [previously published work](#) from the Department of Justice, Altarum’s Value of Health Tool data, and the number of 2016 cases of opioid-related substance use disorders, derived from the [2016 National Survey on Drug Use and Health](#) (NSDUH) produced by the Substance Abuse and Mental Health Services Administration (SAMHSA).

Healthcare Costs—Overdoses: We estimated health care costs associated with opioid overdose emergency room visits and hospital admissions by multiplying the total number of overdose visits found by the [Healthcare Cost and Utilization Project](#) (HCUP) by an estimated cost per visit derived from a recently published [academic paper](#), inflated to 2016 dollars using Altarum [Hospital Price Data](#). While HCUP data on opioid-related overdose visits are not yet available for all states in 2016, we projected national estimates from 2014 through the end of 2016 using data from states with available data. The distribution of health care costs paid by Medicare, Medicaid, private insurance and other sources is estimated using HCUP data on the percentage of opioid overdose visits by primary insurance type. We approximated costs associated with ambulance transportation and naloxone administration based on the number of overdose visits.

Healthcare Costs—Indirect: We predicted indirect health care costs using rates of illicit opioid drug use from 2016 [NSDUH](#) and the probability and cost of HIV, hepatitis B/C, tuberculosis infections and neonatal abstinence syndrome from [recently published academic work](#), inflated to 2016 dollars using Altarum data.

Criminal Justice, Child/Family Assistance, Education: We estimated direct expenditures on these services to respond to the opioid epidemic and related costs for 2016 using methods from previous [academic work](#) applied to Bureau of Justice Statistics [data](#) and from estimates from the [National Center on Addiction and Substance Abuse](#). Where necessary, opioid-related costs were apportioned from total substance use estimates using relative rates of opioid use from [NSDUH](#).