The Economic and Public Health Costs of the Opioid Crisis: A State-Level Panel Analysis

Emily Nam

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Proposal

The opioid crisis in the United States has evolved over multiple decades, and is marked by three interlinked waves. These waves are the rising prescription opioid use in the 200s, a surge in heroin-related deaths in the 2010s, as well as a massive increase in deaths from synthetic opioids, such as fentanyl, beginning in 2013. Studies have shown that by 2017, opioid overdoses have been responsible for over seventy thousand deaths annually; this number is higher than that of HIV at its peak, and even from the entirety of the Vietnam War. Research has suggested that increased prescribing practices, fueled by aggressive pharmaceutical marketing and a lack of regulations, has contributed significantly to the early rise in cursing opioids. Economic shifts, such as the decline in manufacturing and stable employment, have also made these vulnerabilities worse, especially when it comes to lower-income and rural communities.

This project focuses on two core questions: 1. What are the key economic and structural factors contributing to opioid overdose deaths in the United States? Specifically, how do labor force participation rates, manufacturing employment, and prescription rates affect death rates?

2. How do opioid-related deaths affect public healthcare costs, particularly in terms of Medi-care and Medi-caid expenditures? A key component to this involves counterfactual modeling; if labor force participation rates have remained at the same levels as 2000, how many opioid deaths could have been avoided? Further, we ask how much each state, as well as the country as a whole, could have saved in public healthcare expenditures by preventing those deaths.

For the econometric model, we will use two panel-data regression models. The first model will examine how state-level economic conditions (ie. labor and manufacturing employment) and healthcare-related variables (ie. prescription rates) influence opioid overdose death rates. The second model will investigate how these opioid deaths then affect state level Medi-care and Medi-caid expenditures. These models will help us estimate both the direct and indirect effects of labor and healthcare variables when it comes to overdose mortality and public cost. We will do this using fixed-effects estimation across states and years.

This research will utilize a panel dataset from 2000 to 2020 at the state level. Some key variables will include opioid overdose deaths, Medi-care and Medi-caid expenditures, population, prescription rates, and labor force indicators like the labor force participation rate and manufacturing employment share. Additional controls include GDP per capita, education levels, as well as insurance coverage. All the financial values used are adjusted to 2020 dollars using the CPI. Derived variables, such as per capita GDP and log-overdose rates, are constructed in both Excel and Stata.

It is anticipated that lower labor force participation rate and declining manufacturing rates are both associated with higher opioid death rates, such supports our “deaths of despair” hypothesis. Higher prescription rates will likely be a strong predictor for overdose deaths, particularly being applicable in the earlier years. We also can expect that states with higher opioid mortalities will show significantly higher spending in both Medi-care and Medi-caid sectors. We will simulate a scenario where the labor force participation rate remains constant since 2000, and we can expect this to reveal thousands of preventable deaths, as well as billions in avoidable public healthcare spending. These findings could highlight the importance of addressing root economic causes and prescribing patterns in mitigating this opioid crisis.

Abstract

The opioid crisis in the United States is responsible for causing immense social, economic, and public health concerns; it has led to a dramatic increase in overdose deaths, particularly affecting over seventy thousand individuals annually by 2017. This paper investigates the relationships between opioid-related deaths and economic factors, such as labor force participation, manufacturing employment, and prescription rates. Additionally, the analysis explores the impact of these deaths on public healthcare costs, particularly Medi-care and Medi-caid expenditures. Utilizing a state-level panel dataset from 2000 to 2020, the study applies two different econometric models, these being pooled OLS and fixed-effects panel regressions, to assess the effects of said factors on opioid mortality rates. A counterfactual simulation is conducted to estimate the potential number of deaths prevented and healthcare savings if labor force participation remained at 2000 levels. The results show the significant role of economic and structural factors in shaping the opioid epidemic, and highlight the importance of policy interventions focused on economic revitalization and prescription regulation to mitigate public health and economic burdens.

I. Introduction

1. Background

The opioid crisis in the United States has quickly become one of the deadliest public health emergencies in the 21st century, being responsible for tens of thousands of deaths a year. This crisis is characterized by three distinct interlinked waves: the rise in prescription opioid usage in the 2000s, a surge in heroin-related deaths in the 2010s, and the most recent being a dramatic increase in deaths caused by synthetic opioids such as fentanyl. The Centers for Disease Control and Prevention (CDC) reports that in 2017, opioid overdose deaths claimed the lives of over 70,000 individuals, this being more than the total number of U.S. soldiers killed during the entirety of the Vietnam War. While the epidemic began with the over-prescription of painkillers, it evolved and exacerbated the crisis as heroin and fentanyl became more accessible.

Initial research has shown that aggressive pharmaceutical marketing and a lack of regulatory oversight have played pivotal roles in driving the early years of this crisis. Additionally, these socioeconomic shifts have exacerbated vulnerabilities, especially in rural and lower-income communities. The most notable has been the decline of manufacturing jobs, as well as stable employment in general becoming more scarce. These structural factors, alongside healthcare policies, have contributed significantly to how the crisis is persisting, affecting both healthcare systems and the broader economy. The burden of this epidemic is not just public health-related, but also extends to state and federal expenditures, especially Medi-care and Medi-caid programs, which take the majority of healthcare costs associated with opioid overdose treatments and long-term addiction care.

2. Research Questions

This paper will aim to explore three critical questions:

1. What are the key economic and structural factors contributing to opioid overdose deaths in the United States? Specifically, how do labor force participation rates, manufacturing employment, as well as prescription rates influence death rates?
2. How do these opioid-related deaths affect public healthcare costs, particularly in terms of Medi-care and Medi-caid expenditures?
3. What category of states are the most affected and troubled by opioid deaths in the last couple of decades?

To answer these questions, this paper will utilize a state-level panel dataset from the years 2000 to 2020. The study focuses on two econometric models; one examines the impact of economic and healthcare variables on opioid overdose deaths, and the second investigates the subsequent effects of opioid-related deaths on public healthcare spending. Both of the models use fixed-effects estimations to account for unobserved heterogeneity across states and years; this allows us to isolate the effects of the key variables on opioid mortality and public health expenditures.

3. Discussion of Opioid Market Dynamics

The dynamics of the opioid epidemic can be understood through a demand-supply framework; the prescription opioid availability represents the supply side, and the rising demand side for opioids is driven by socioeconomic factors, such as unemployment, poverty, low education levels, as well as the public release of oxycodone. The role of prescription opioids is more pronounced in the early stages of the crisis from aggressive marketing and a lack of regulations. Pharmaceutical companies played a significant role in fueling the crisis through aggressive marketing tactics that downplayed the addictive potential of prescription opioids. This led to increased over-prescriptions, leading to a higher number of overdose deaths. However, the later waves of the crisis, marked by more heroin and synthetic opioids, show how changes in the drug supply can also influence this death count. In addition, the role of labor force participation and manufacturing employment is also crucial, since economic decline and declining stable jobs in marginalized communities have contributed to the rise of “deaths of despair” for vulnerable populations. These structural economic issues, combined with the availability of cheap opioids, have created a perfect environment for the opioid epidemic, particularly in rural and working-class communities.

States with lower labor force participation rates and higher levels of manufacturing job loss have experienced higher opioid mortality rates, suggesting that economic factors are integral to understanding opioid misuse and overdose deaths. Additionally, research indicates that opioid overdose deaths are closely linked to the level of legal prescription opioid use, with higher prescription rates correlating to higher death rates in the early stages.

4. Data and Methodology

As mentioned before, this study utilizes a panel dataset spanning from the years 2000 to 2020 at the state level. Key variables will include opioid overdose deaths, prescription rates, labor force participation, manufacturing employment, as well as Medi-care and Medi-caid expenditures. These variables are used to assess how economic and healthcare factors influence opioid overdose mortality and the subsequent impact on state healthcare costs.

This analysis will use two primary econometric regression models:

1. Pooled OLS Regression: This model estimates the relationship between opioid overdose deaths and economic and healthcare variables across all states and years, using pooled cross-sectional data.
2. Fixed-Effects Panel Regression: This model controls for state-specific, time-invariant unobserved heterogeneity, allowing for a more precise estimate of how opioid deaths affect public healthcare expenditures. This data will be analyzed using STATA, and the results will be robust to standard errors clustered at the state level to account for within-state correlation.

We also performed a counterfactual simulation assuming that the labor force participation remained constant at 2000 levels to estimate how the opioid epidemic could have been mitigated. The simulation calculates the number of deaths that could have been avoided, as well as the potential savings in healthcare costs.

II. Background & Previous Research

Previous research on the opioid crisis has primarily focused on the role of prescription drugs and their contribution to overdose deaths. Dasgupta et al. (2018) emphasize that the opioid epidemic is driven by both demand-side factors and supply-side factors; they argue that the opioid epidemic is a consequence of both social and economic determinants, with increased prescribing driven by aggressive marketing by pharmaceutical companies and economic instability exacerbating demand for opioids. Florence et al. (2016) also provide a more comprehensive analysis of the economic burden of opioid abuse, as well as giving an estimate that prescription opioid overdose, abuse, and dependence have cost the U.S. economy over $78 billion annually in healthcare, loss of productivity, and criminal justice costs alone. Scavette (2019) focuses on the economic effects of opioid misuse, particularly in areas that have experienced declines in manufacturing employment. These economic disruptions are linked to higher opioid addiction rates and deaths, particularly in rural and working-class communities. This paper builds on these findings by incorporating economic variables, such as labor force participation and manufacturing employment, into the analysis and examining their impact on opioid mortality and public health expenditures.

With these findings in mind, this paper hypothesizes that states with lower labor force participation rates and higher manufacturing employment declines are more likely to have a higher number of opioid overdose deaths. Additionally, prescription rates are expected to significantly influence the overdose mortality rate, especially in the earlier years of the crisis. We also hypothesize that states with higher opioid mortality rates will experience higher public healthcare costs, specifically through Medi-care and Medi-caid expenditures.

III. Data Description

The dataset used for this analysis spans from the years of 2000 to 2020, and encompasses key economic and public health variables across 51 U.S. states. These variables are collected from national sources such as the Bureau of Labor Statistics (BLS) for labor force participation and manufacturing employment, Kiser Family Foundation (KFF) for overdose deaths, and the Centers for Medi-care & Medi-caid Services (CMS) for healthcare expenditures, and more.

The dataset includes the following key variables:

TABLE I
Variable Descriptions

Variable Name	Description	Source	Unit of Measurement	Mean	Standard Deviation
state	state name	-	-	-	-
t	time variable (2000 to 2020)	-	-	-	-
stateid	state identifier	-	-	-	-
year	year (2000 to 2020)	-	-	-	-
medicarml	Medi-care spending, current dollars	Centers for Medi-care & Medi-caid Services	million dollars	9405.18	11727.76
Medi-caid	Medi-caid spending, current dollars	Centers for Medi-care & Medi-caid Services	million dollars	7318.15	10420.07
oddeaths	opioid overdose deaths in a state	Kiser Family Foundation	number of deaths	519.51	675.99
population	population of state	U.S. Census Bureau	number of residents	6039.75	6783.97
medhhinc	median household	U.S. Census	dollars	52444.30	11638.42

	income, current dollar	Bureau			
gdp	gross domestic product, current dollar	Bureau of Economic Analysis	dollars	304040.49	389747.96
lfpr	labor force participation rate (%)	Bureau of Labor Statistics	percentage	65.46	4.26
unemprate	unemployment rate (%)	Bureau of Labor Statistics	percentage	5.58	2.03
pchinsured	percentage of population insured	U.S. Census Bureau	percentage	88.25	4.28
percenthsgrad	percentage of high school graduates	U.S. Census Bureau	percentage	87.23	3.66
prescriptionrate	number of prescriptions dispensed per 100 people	Centers for Disease Control	prescriptions per 100 people	47.76	12.83
cpi	consumer price index	Bureau of Labor Statistics	index	214.30	26.60
tcmcaremcaidml	total Medi-care and Medi-caid spending	-	million dollars	16723.33	19218.44
tcmcaremcaidmladj	adjusted Medi-care and Medi-caid spending (2020 dollars)	-	million dollars	19729.53	21564.67
medhhincadj	adjusted mean household income (2020 dollars)	-	dollars	62966.89	10228.04
gdpadj	adjusted gdp (2020 dollars)	-	dollars	361604.43	447066.40

pcgdpmanu	percentage of gdp contributed by manufacutring sector	Bureau of Economic Analysis	percentage	11.98	5.58
pcempmanu	percentage of employment in manufacturing sector	Bureau of Economic Analysis	percentage	4.33	1.93
logtcmcaremcaidmladj	log-transofmred adjusted Medi-care and Medi-caid spending	-	log of million dollars	9.45	0.96
oddeathsrate	opioid overdose death rate per 100,000 population	Kiser Family Foundation	deaths per 100,000 residents	0.09	0.10
logoddeathsrate	log transformed opioid overdose death rate	-	log of deaths per 100,000	-	-
gdpadjpc	gdp per capita adjusted for 2020 dollars	-	dollars	60.30	22.67
lfpr1	labor force participation rate, 2000 level maintained	Bureau of Labor Statistics	percentage	-	-

IV. Econometric Models

1. Pooled OLS Regression Model

The first model estimates the relationship between opioid overdose deaths and various economic and healthcare variables using pooled OLS regression:

$$log(oddeaths100k) = \beta0 + \beta1pcempmanu + \beta2log(medhhincadj) + \beta3log(gdpadj)$$
$$+ \beta4pchinsured + \beta5percenthsgrad + \beta6lfpr + \epsilon$$

This model captures the direct effects of various economic and social factors on opioid mortality, but does not account for any unobserved heterogeneity across states that may influence the outcome.

2. Fixed-Effects Panel Regression Model

The second model controls for unobserved heterogeneity by incorporating state-level fixed effects:

$$log(oddeaths100k) = \alpha i + \beta1pcempmanu + \beta2log(medhhincadj) + \beta3log(gdpadj)$$
$$+ \beta4pchinsured + \beta5percenthsgrad + \beta6lfpr + ut + \epsilon it$$

This model provides more accurate estimates of the relationships between opioid deaths and economic factors by controlling for state-specific and time-varying factors, ensuring that the results are not confounded by unmeasured heterogeneity.

3. Analysis

Both the pooled OLS and fixed-effects panel regression models provide consistent evidence that increasing labor force participation could serve as an important lever in reducing opioid overdose deaths. Specifically, in the pooled OLS regression, a 1% increase in labor force participation is associated with a 0.5% reduction in opioid death rates; this suggests that economic engagement, especially employment, plays a vital role in reducing opioid mortality.

Labor force participation could offer both social and economic benefits, such as increased stability, access to healthcare, and social connection, which help mitigate substance misuse and overdose deaths. We will further explore these findings through simulations, estimating how much opioid mortality could be reduced if labor force participation had remained at 2000 levels.

V. Estimation Results

The results from both the pooled OLS and fixed-effects panel regression models show strong relationships between economic, healthcare variables, and opioid mortality rates. Specifically, labor force participation and manufacturing employment are significant predictors of opioid overdose deaths, while prescription rates show a strong positive correlation with these deaths.

1. Labor Force Participation and Opioid Death

Chart I
Labor Force Participation Rate (LFPR) Trend
(United States, Kentucky, New Mexico)

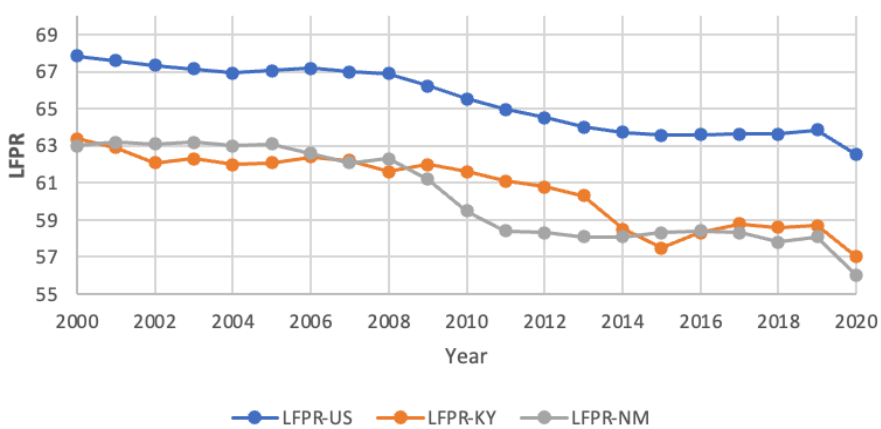


Chart II
Overdose Deaths Per 100k Residents
(United States, Kentucky, New Mexico)

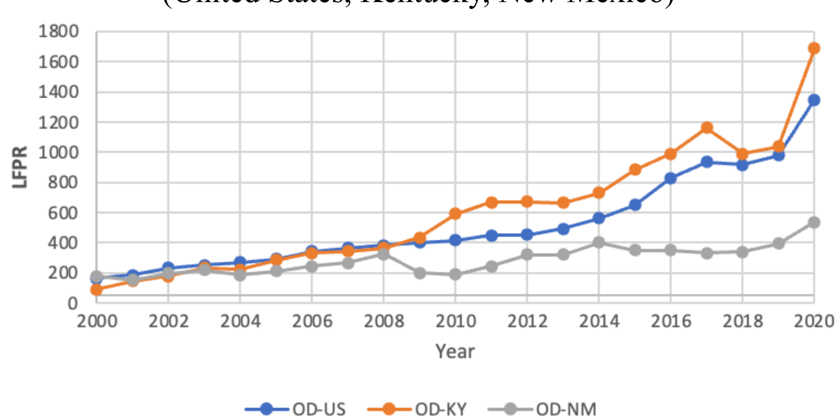
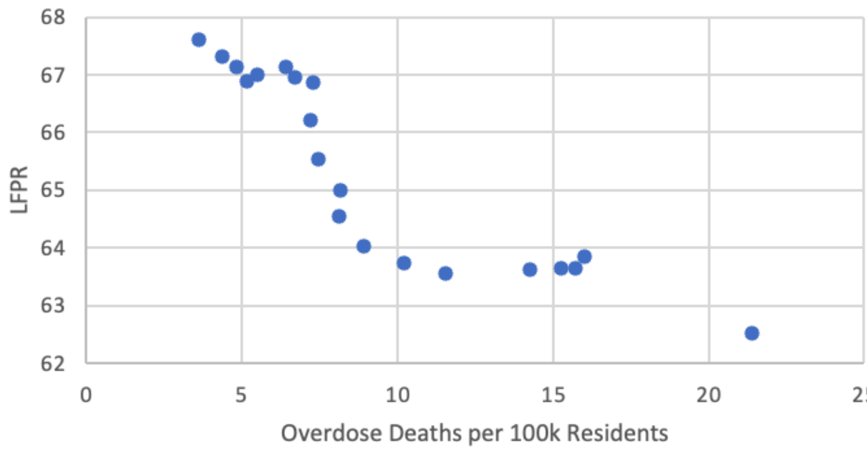


Chart II shows a clear upward trend in overdose deaths, with Kentucky experiencing a sharper increase than the national average. The results from the regression analysis show that the labor force participation rate is a crucial variable in predicting opioid overdose deaths across all states. States with higher LFPR, which is indicative of a healthier economy, tend to have lower opioid mortality rates, as shown through an inverse relationship in Charts I and II.

Chart III
Opioid Overdose Death Rate vs. Labor Force Participation (LFPR)
(All Three States Combined)



For example, North Dakota, with an LFPR of 71.76%, ranks first for having the lowest opioid death rate in the country, with an overdose death rate of 2.49 per 100,000 in 2000. Their average cost per death is calculated at 6.1 million dollars, resulting in a total annual cost saving of $12.3 million by avoiding opioid deaths. In contrast, states with lower labor force participation rates tend to have higher opioid mortality rates. For instance, West Virginia, with an LFPR of 54.648%, had one of the highest overdose death rates at 24.336 per 100,000 in 2020.

2. Manufacturing Employment and Opioid Mortality

States with higher levels of manufacturing employment experience lower opioid overdose deaths, suggesting that economic stability and manufacturing jobs play a key role in reducing the opioid epidemic.

For instance, Michigan, with a manufacturing employment share of 63.081%, ranks in the middle in terms of overdose deaths, but still sees a reduction in opioid deaths relative to states with a higher dependence on non-manufacturing sectors. California, with a 64.2% manufacturing employment rate, had opioid deaths reduced by 0.3% per year as compared to states with lower employment in manufacturing. On the other hand, states with lower manufacturing employment share tend to have higher opioid death rates. For example, Alabama ranks in the top 10 for opioid deaths, and Mississippi, with lower manufacturing employment, experiences high overdose mortality rates; with only 58.452% manufacturing employment, Mississippi ranked 50/51 for opioid deaths. This shows how the manufacturing sector has contributed to higher opioid death rates in many states.

3. Prescription Rates and Opioid Deaths

Prescription opioid rates have been a major driver of the opioid crisis, particularly in the earlier stages. States with higher prescription rates, or the number of prescriptions per capita, often correlate with higher overdose death rates.

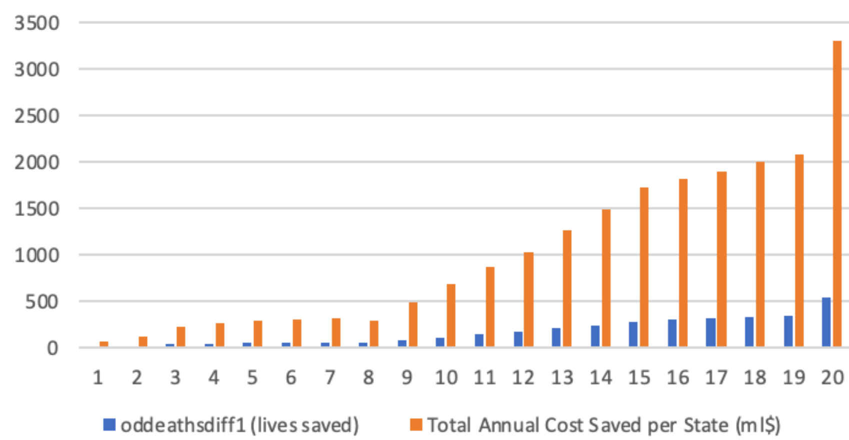
Delaware had one of the highest prescription rates in the U.S. and an average overdose death rate of 13.543 per 100,000 in 2020; this high rate of prescription medications contributed to a higher mortality rate. They experienced an annual total cost saving of $136.76 million due to the reduction in opioid deaths by maintaining the labor force participation at 2000 levels.

VI. Simulation Results

A key aspect of this study was the counterfactual simulation, which assumed that labor force participation rates remained constant at 2000 levels. By running this simulation, we estimated the potential number of opioid deaths that could have been avoided and the corresponding savings in public healthcare costs if the labor force participation rates had remained at these levels.

Chart IV

Estimated Lives Saved & Total Annual Cost Saved Per State (millions)



1. Estimated Lives Saved

The simulation results suggest that if labor force participation had not decreased from its 2000 level, approximately 342,000 opioid overdose deaths could have been avoided across the United States over the period from 2001 to 2020.

For example, in 2020 alone, West Virginia saw 542.722 opioid overdose deaths per 100,000, but with an increased LFPR at 2000 levels, this number could have been reduced by 310 deaths, preventing a total of $33.1 million in Medi-care and Medi-caid expenditures for the state.

2. Healthcare Cost Savings

The potential savings in public healthcare costs are also substantial; based on the estimated number of lives saved per state and the average cost per opioid death of approximately $6.1 million, the total savings across the country is approximately $168 million annually from the model.

For states such as Mississippi and West Virginia, where opioid overdose death rates are among the highest, the potential savings from maintaining 2000 labor force participation levels could amount to over $147 million in healthcare savings annually.

VII. Policy Implications and Limitations

1. Policy Implications

The findings of this paper show the importance of addressing economic factors, such as labor force participation and manufacturing employment, to mitigate the opioid crisis. States with stronger labor markets and higher levels of employment in stable industries, such as manufacturing, show lower opioid death rates. Policymakers should focus on economic revitalization in areas with high opioid death rates, doing this by investing in manufacturing and other high-employment industries. They should also put more attention on prescription regulation to reduce the over-prescription of opioids, particularly in states where prescription rates correlate strongly with opioid deaths. Policies that promote higher education and workforce participation are essential, particularly for states like West Virginia and Mississippi, where labor force participation and manufacturing jobs have declined significantly.

2. Limitations

While the study demonstrates a significant relationship between labor force participation and opioid overdose deaths, it does not establish a definite causal link. There could be further research done to incorporate additional variables, such as healthcare access, law enforcement policies, and mental health services, to provide a more comprehensive analysis. In addition to this, regional variations in healthcare access and drug law enforcement could have influenced the generalizability of these findings.

VIII. Conclusion

This paper provides a comprehensive analysis of the significant role that economic factors, such as labor force participation and manufacturing employment, play in influencing opioid overdose deaths across states. The analysis shows that states with higher labor force participation and more manufacturing jobs tend to experience lower opioid mortality rates, while areas with high economic distress, such as declining job opportunities, are more vulnerable to the opioid crisis. The counterfactual simulation further suggests that maintaining labor force participation at 2000 levels could have prevented hundreds of thousands of deaths, as well as saved billions of dollars in public healthcare costs. These findings emphasize the importance of addressing economic disparities as part of a more comprehensive strategy to combat the rising opioid epidemic.

The results also show the critical need for policy interventions that combine economic revitalization with stricter prescription regulations. States should prioritize reviving manufacturing sectors, expanding job training programs, and strengthening prescription monitoring to reduce opioid misuse. Future research should also be conducted to focus on refining these models, such as by incorporating additional variables like healthcare access and law enforcement policies, as well as exploring mechanisms to inform more effective policy responses in the future.

References

Brill, A., & Ganz, S. (2018). *The geographic variation in the cost of the opioid crisis*. American Enterprise Institute.

Chattopadhyay, S. (2025). *Does Declining Labor Force Participation in the United States Have a Role in Opioid Deaths? A State Level Analysis of The Economic Cost*.

Council of Economic Advisers. (2019). *The role of opioid prices in the evolving opioid crisis*. Executive Office of the President of the United States.

Dasgupta, N., Beletsky, L., & Ciccarone, D. (2018). Opioid crisis: No easy fix to its social and economic determinants. *American Journal of Public Health, 108*(2), 182–186.

Florence, C., Luo, F., Xu, L., & Zhou, C. (2016). The economic burden of prescription opioid overdose, abuse, and dependence in the United States, 2013. *Medical Care, 54*(10), 901–906.

Parramore, L. (2019, February 20). *Opioid crisis shows how economic inequality kills*. Institute for New Economic Thinking.

Scavette, A. (2019). *Exploring the economic effects of the opioid epidemic*. Federal Reserve Bank of Philadelphia.

Appendix

```
. xtset stateid t
       panel variable:  stateid (strongly balanced)
        time variable:  t, 0 to 20
                delta:  1 unit

. gen oddeaths100k= oddeaths*100000/ population

. gen logoddeaths=log(oddeaths)
(12 missing values generated)

.
. gen logoddeaths100k=log(oddeaths100k)
(12 missing values generated)

.
. gen logmedhhincadj =log(medhhincadj)

.
. gen loggdpadj =log(gdpadj)

.
. gen logtcmcaremcaidmladj=log(tcmcaremcaidmladj)

. reg logoddeaths100k pcempmanu logmedhhincadj loggdpadj pchinsured percenthsgr
> ad lfpr

      Source |       SS           df       MS      Number of obs   =     1,059
-------------+----------------------------------   F(6, 1052)      =    122.27
       Model |  249.050071         6  41.5083452   Prob > F        =    0.0000
    Residual |  357.138985     1,052  .339485727   R-squared       =    0.4108
-------------+----------------------------------   Adj R-squared   =    0.4075
       Total |  606.189056     1,058   .57295752   Root MSE        =    .58265
```

logodde~100k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pcempmanu	-.075633	.0115109	-6.57	0.000	-.0982199	-.053046
logmedhhin~j	1.230141	.1917859	6.41	0.000	.8538148	1.606468
loggdpadj	.0248219	.0211857	1.17	0.242	-.0167491	.0663929
pchinsured	.0145523	.0059549	2.44	0.015	.0028676	.0262371
percenthsg~d	.0644997	.0072568	8.89	0.000	.0502602	.0787391
lfpr	-.1061213	.0065505	-16.20	0.000	-.1189749	-.0932678
_cons	-4.67466	1.49118	-3.13	0.002	-7.600686	-1.748634

```
. reg logoddeaths100k pcempmanu logmedhhincadj loggdpadj pchinsured percenthsgr
> ad lfpr, vce(cluster oddeaths100k)

Linear regression                               Number of obs     =      1,059
                                                F(6, 1058)        =      84.00
                                                Prob > F          =     0.0000
                                                R-squared         =     0.4108
                                                Root MSE          =     .58265

                         (Std. Err. adjusted for 1,059 clusters in oddeaths100k)
```

logodde~100k	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pcempmanu	-.075633	.0126047	-6.00	0.000	-.1003661	-.0508999
logmedhhin~j	1.230141	.2159366	5.70	0.000	.8064287	1.653854
loggdpadj	.0248219	.0220967	1.12	0.262	-.0185365	.0681803
pchinsured	.0145523	.0060097	2.42	0.016	.00276	.0263447
percenthsg~d	.0644997	.007512	8.59	0.000	.0497596	.0792398
lfpr	-.1061213	.0070794	-14.99	0.000	-.1200126	-.09223
_cons	-4.67466	1.693815	-2.76	0.006	-7.998278	-1.351042

```
. xtreg logoddeaths100k pcempmanu logmedhhincadj loggdpadj pchinsured percenths
> grad lfpr,fe robust

Fixed-effects (within) regression               Number of obs     =      1,059
Group variable: stateid                         Number of groups  =         51

R-sq:                                           Obs per group:
     within  = 0.6693                                         min =         15
     between = 0.0704                                         avg =       20.8
     overall = 0.2404                                         max =         21

                                                F(6,50)           =      50.63
corr(u_i, Xb)  = -0.6592                        Prob > F          =     0.0000

                               (Std. Err. adjusted for 51 clusters in stateid)
------------------------------------------------------------------------------
             |               Robust
logodde~100k |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   pcempmanu |  -.2956021   .0504064    -5.86   0.000    -.3968463   -.1943579
logmedhhin~j |   .8602529   .3424273     2.51   0.015     .1724674    1.548038
   loggdpadj |   .5103568   .2919032     1.75   0.087     -.075948    1.096662
  pchinsured |  -.0047023   .0111879    -0.42   0.676    -.0271739    .0177692
percenthsg~d |   .0997978   .0175345     5.69   0.000     .0645787     .135017
        lfpr |  -.0654553   .0184853    -3.54   0.001    -.1025841   -.0283265
       _cons |  -9.638175   3.318088    -2.90   0.005    -16.30275   -2.973598
-------------+----------------------------------------------------------------
     sigma_u |  .75488915
     sigma_e |  .34992481
         rho |  .82313088   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. xtreg logoddeaths100k pcempmanu logmedhhincadj loggdpadj pchinsured percenths
> grad lfpr,re robust

Random-effects GLS regression                   Number of obs     =      1,059
Group variable: stateid                         Number of groups  =         51

R-sq:                                           Obs per group:
     within  = 0.6645                                         min =         15
     between = 0.1055                                         avg =       20.8
     overall = 0.3293                                         max =         21

                                                Wald chi2(6)      =     307.00
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

                                 (Std. Err. adjusted for 51 clusters in stateid)
------------------------------------------------------------------------------
             |               Robust
logodde~100k |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   pcempmanu |  -.2351398   .0326409    -7.20   0.000    -.2991148   -.1711648
logmedhhin~j |   .8122064     .31836     2.55   0.011     .1882322    1.436181
   loggdpadj |    .205033   .0953624     2.15   0.032     .0181262    .3919398
  pchinsured |  -.0050099   .0102229    -0.49   0.624    -.0250464    .0150267
percenthsg~d |   .1095009    .013489     8.12   0.000     .0830629     .135939
        lfpr |  -.0874811   .0141423    -6.19   0.000    -.1151995   -.0597628
       _cons |  -5.003216   2.820298    -1.77   0.076     -10.5309    .5244658
-------------+----------------------------------------------------------------
     sigma_u |  .43221505
     sigma_e |  .34992481
         rho |  .60405978   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. xtreg logtcmcaremcaidmladj logoddeaths logmedhhincadj loggdpadj pchinsured pe
> rcenthsgrad unemprate,fe robust

Fixed-effects (within) regression               Number of obs     =      1,059
Group variable: stateid                         Number of groups  =         51

R-sq:                                           Obs per group:
     within  = 0.1460                                         min =         15
     between = 0.8438                                         avg =       20.8
     overall = 0.6802                                         max =         21

                                                F(6,50)           =      39.59
corr(u_i, Xb)  = -0.3752                        Prob > F          =     0.0000

                               (Std. Err. adjusted for 51 clusters in stateid)
------------------------------------------------------------------------------
             |               Robust
logtcmcare~j |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 logoddeaths |   .1685417   .0330604     5.10   0.000      .102138    .2349454
logmedhhin~j |  -.4617617   .2750853    -1.68   0.099    -1.014287    .0907633
   loggdpadj |   .6924182   .2977538     2.33   0.024      .094362    1.290474
  pchinsured |    .033189   .0071881     4.62   0.000     .0187512    .0476268
percenthsg~d |   -.031941   .0143928    -2.22   0.031    -.0608497   -.0030323
   unemprate |   .0191919   .0088973     2.16   0.036     .0013211    .0370627
       _cons |   4.857024   5.271986     0.92   0.361    -5.732071    15.44612
-------------+----------------------------------------------------------------
     sigma_u |  .36616423
     sigma_e |  .44508098
         rho |  .40363339   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. xtreg logtcmcaremcaidmladj logoddeaths logmedhhincadj loggdpadj pchinsured pe
> rcenthsgrad unemprate,re robust

Random-effects GLS regression                   Number of obs     =      1,059
Group variable: stateid                         Number of groups  =         51

R-sq:                                           Obs per group:
     within  = 0.1448                                         min =         15
     between = 0.8490                                         avg =       20.8
     overall = 0.6847                                         max =         21

                                                Wald chi2(6)      =     272.21
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =     0.0000

                               (Std. Err. adjusted for 51 clusters in stateid)
------------------------------------------------------------------------------
             |               Robust
logtcmcare~j |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
 logoddeaths |   .1708944   .0271058     6.30   0.000      .117768    .2240208
logmedhhin~j |  -.6116224   .2492728    -2.45   0.014    -1.100188   -.1230567
   loggdpadj |   .5758631   .0653481     8.81   0.000     .4477831     .703943
  pchinsured |   .0309916   .0074851     4.14   0.000      .016321    .0456623
percenthsg~d |  -.0215125   .0124174    -1.73   0.083    -.0458502    .0028251
   unemprate |   .0129744   .0085137     1.52   0.128    -.0037121    .0296609
       _cons |   7.253955   2.606998     2.78   0.005     2.144333    12.36358
-------------+----------------------------------------------------------------
     sigma_u |  .31057447
     sigma_e |  .44508098
         rho |  .32746674   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. gen lfprtemporary=lfpr

.
. gen lfpr2000=lfpr

.
. replace lfpr2000=lfpr2000[_n-1] if year>2000
(997 real changes made)

. xtreg logoddeaths100k pcempmanu logmedhhincadj loggdpadj pchinsured percenths
> grad lfpr,fe robust

Fixed-effects (within) regression               Number of obs     =      1,059
Group variable: stateid                         Number of groups  =         51

R-sq:                                           Obs per group:
     within  = 0.6693                                         min =         15
     between = 0.0704                                         avg =       20.8
     overall = 0.2404                                         max =         21

                                                F(6,50)           =      50.63
corr(u_i, Xb)  = -0.6592                        Prob > F          =     0.0000

                               (Std. Err. adjusted for 51 clusters in stateid)
------------------------------------------------------------------------------
             |               Robust
logodde~100k |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   pcempmanu |  -.2956021   .0504064    -5.86   0.000    -.3968463   -.1943579
logmedhhin~j |   .8602529   .3424273     2.51   0.015     .1724674    1.548038
   loggdpadj |   .5103568   .2919032     1.75   0.087     -.075948    1.096662
  pchinsured |  -.0047023   .0111879    -0.42   0.676    -.0271739    .0177692
percenthsg~d |   .0997978   .0175345     5.69   0.000     .0645787     .135017
```

```
        lfpr |  -.0654553   .0184853    -3.54   0.001    -.1025841   -.0283265
       _cons |  -9.638175   3.318088    -2.90   0.005    -16.30275   -2.973598
-------------+----------------------------------------------------------------
     sigma_u |  .75488915
     sigma_e |  .34992481
         rho |  .82313088   (fraction of variance due to u_i)
------------------------------------------------------------------------------

.
. predict logodd100khat1
(option xb assumed; fitted values)

. replace lfpr=lfpr2000
(997 real changes made)

.
. predict logodd100khat2
(option xb assumed; fitted values)

. replace lfpr=lfprtemporary
(997 real changes made)

. gen exp1=exp(logodd100khat1)

.
. gen exp2=exp(logodd100khat2)

.
. gen exp1minus2= exp1- exp2

.
. gen oddeathsdiff= exp1minus2/100000* population
```

```
.
. sum oddeathsdiff

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeathsdiff |      1,071     149.543    433.7825  -219.3848   5693.357

. sum oddeathsdiff if oddeathsdiff>0 & year>2000

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeathsdiff |        862    188.0262    475.5143   .0715648   5693.357

.
. gen oddeathsdiff1= oddeathsdiff

.
. replace oddeathsdiff1=. if year==2000 | oddeathsdiff<=0
(209 real changes made, 209 to missing)

. sum oddeaths100k lfpr oddeathsdiff1

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |      1,071    9109.694    7586.809          0   63014.54
        lfpr |      1,071    65.46032    4.264343       53.3       75.4
oddeathsdi~1 |        862    188.0262    475.5143   .0715648   5693.357

.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2000
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	3119.982	2291.77	0	9883.594
lfpr	51	67.84706	3.718514	55.8	75.1
oddeathsdi~1	0				

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2001
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	3639.941	2364.566	0	9098.199
lfpr	51	67.59804	3.818769	55.7	75.4
oddeathsdi~1	29	10.89553	20.93892	.3178935	106.7897

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2002
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	4358.402	2563.198	0	10564.27
lfpr	51	67.32549	3.844052	55.6	75.1
oddeathsdi~1	33	20.18558	35.20004	.2769856	148.1071

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2003
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	4819.789	3107.464	0	11610.75
lfpr	51	67.12745	3.884229	55	74.9
oddeathsdi~1	37	37.14806	78.16303	.3561758	352.7977

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2004
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	5160.336	2838.269	899.9623	13818.24
lfpr	51	66.89412	3.85328	54.8	74.4
oddeathsdi~1	42	43.41882	94.37593	.4111777	506.4861

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2005
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	5504.941	2952.817	0	13280.49
lfpr	51	67.00588	3.742802	55.1	73.4
oddeathsdi~1	35	48.10101	90.88174	.9769437	497.3667

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2006
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	6415.11	3379.363	0	15591.58
lfpr	51	67.13333	3.797456	55.5	73.3
oddeathsdi~1	32	49.70497	108.7029	1.640941	585.2175

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2007
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	6715.247	3492.158	2186.785	18102.01
lfpr	51	66.95882	3.917917	55.3	73.9
oddeathsdi~1	36	52.87494	99.71065	.0715648	495.0943

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2008
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	7283.266	3610.157	1614.358	20159.65
lfpr	51	66.85882	3.989646	55.2	74.2
oddeathsdi~1	36	48.72229	93.07636	.2096331	419.2523

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2009
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	7222.011	3312.322	628.1694	16352.1
lfpr	51	66.21176	4.088748	55.3	73.1
oddeathsdi~1	41	79.13301	141.5979	.5161111	713.0413

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2010
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	7471.042	3849.328	2667.647	24322.24
lfpr	51	65.53922	4.004102	54.7	73
oddeathsdi~1	45	112.3714	208.9785	1.134203	1221.81

```
. sum oddeaths100k lfpr oddeathsdiff1 if year==2011
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	8153.355	4563.263	1458.734	29623.88
lfpr	51	65.00392	3.983866	54.3	72.9
oddeathsdi~1	49	143.7027	268.1421	.3699442	1605.351

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2012
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	8118.551	4336.05	0	25195.83
lfpr	51	64.55098	3.969906	54.4	72.8
oddeathsdi~1	49	169.0646	317.9527	1.282725	1882.381

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2013
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	8907.896	4541.338	1521.125	26418.37
lfpr	51	64.02745	4.086812	53.9	71.9
oddeathsdi~1	49	206.8426	375.3466	2.205889	2192.781

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2014
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	10200.07	5403.961	2978.787	29936.72
lfpr	51	63.73725	4.18736	53.7	71.8
oddeathsdi~1	49	243.4175	434.5159	2.957884	2508.882

.

. sum oddeaths100k lfpr oddeathsdiff1 if year==2015

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	11560.76	6689.483	2906.885	34123.03
lfpr	51	63.55686	4.088044	53.5	70.7
oddeathsdi~1	50	282.3588	524.1963	.2686878	2872.94

.

. sum oddeaths100k lfpr oddeathsdiff1 if year==2016

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	14258.62	8670.477	2307.918	40001.31
lfpr	51	63.62549	4.050671	53.3	70.7
oddeathsdi~1	50	299.0932	567.5647	.2816156	3084.396

.

. sum oddeaths100k lfpr oddeathsdiff1 if year==2017

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	15701.2	9922.08	3077.726	45802.45
lfpr	51	63.64902	4.026828	53.5	70.6
oddeathsdi~1	50	311.5952	603.4023	.5779236	3269.214

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2018
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	15250.02	9470.285	3184.04	38871.51
lfpr	51	63.64314	3.979159	54.4	70.5
oddeathsdi~1	50	328.6264	640.4972	2.540756	3423.727

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2019
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	16032.79	9595.233	3518.631	39624.52
lfpr	51	63.84118	3.977747	54.7	71.1
oddeathsdi~1	50	341.1504	694.9375	2.619838	3863.551

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if year==2020
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	51	21410.24	12347.57	5099.053	63014.54
lfpr	51	62.53137	4.020522	53.9	69.8
oddeathsdi~1	50	542.7217	1083.513	5.810489	5693.357

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	4420.897	2973.043	965.8212	12139.66
lfpr	21	59.59048	2.296716	56.7	63.6
oddeathsdi~1	20	56.97676	45.36501	3.472301	141.2557

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==2
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	7955.388	4834.13	0	15279.32
lfpr	21	69.03333	2.939105	63.5	73.3
oddeathsdi~1	20	23.13401	18.46167	2.184877	62.12768

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==3
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9678.401	5013.704	4553.743	26213.49
lfpr	21	62.7619	2.158582	59.9	66.1
oddeathsdi~1	17	223.8463	153.7762	9.888554	401.4411

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==4
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	5346.73	1990.051	746.6614	9420.975
lfpr	21	60.34286	2.002392	57.4	63.1
oddeathsdi~1	15	20.45605	16.55032	.3561758	49.97456

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==5
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	5186.853	2368.536	1598.053	13936.56
lfpr	21	64.2	1.921197	60.9	67.1
oddeathsdi~1	19	1856.811	1539.044	91.75381	5693.357

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==6
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	7852.895	2958.347	4021.336	16899.57
lfpr	21	70.12381	2.186757	66.8	72.8
oddeathsdi~1	14	210.6074	146.8186	4.400076	474.4522

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==7
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	12446.19	10111.33	4340.429	34916.98
lfpr	21	66.95238	1.174572	64.6	68.8
oddeathsdi~1	15	39.05549	27.8479	3.997923	103.6605

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==8
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	13543.16	12013.71	3431.344	41031.2
lfpr	21	64.30952	2.885464	60.9	69.6
oddeathsdi~1	19	22.41932	16.071	2.154262	53.07466

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==9
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	14355.11	12934.21	2195.1	50229.76
lfpr	21	68.82857	1.287689	66.6	71.1
oddeathsdi~1	4	2.390457	1.486958	.492828	3.88011

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==10
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9445.128	5166.073	3464.71	25333.41
lfpr	21	61.25714	1.836184	57.5	63.9
oddeathsdi~1	16	1426.657	1173.296	148.1071	4319.041

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==11
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	5548.711	2843.444	1397.785	12158.89
lfpr	21	65.21429	2.678112	61.1	68.9
oddeathsdi~1	20	269.2667	245.2108	12.66344	846.7703

.
```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==12
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	4365.14	876.3743	2389.742	5928.493
lfpr	21	63.55238	2.346619	59.1	67.3
oddeathsdi~1	20	74.09788	61.31247	1.681886	226.5994

.
```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==13
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	4874.24	1574.854	2154.791	8651.36
lfpr	21	66.28571	2.311122	63.5	70
oddeathsdi~1	19	21.36581	16.75031	.3558231	57.46506

.
```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==14
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9182.7	5532.646	3663.584	23032.89
lfpr	21	66.18095	1.58859	62.6	69.4
oddeathsdi~1	20	352.4289	266.3526	34.47221	1117.429

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==15

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21     7358.56    7125.859   673.0281   27641.56
        lfpr |         21    65.43333    1.833667         63       67.9
oddeathsdi~1 |         18     40.5576    28.12669   .6170846   103.1669

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==16

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    4063.523    1953.217     648.67   7019.435
        lfpr |         21    70.66191    1.464744       66.8       72.6
oddeathsdi~1 |         13    12.51844    11.24727   .3595008   43.95364

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==17

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    4492.875    1722.475   816.7266   8917.115
        lfpr |         21    69.15238    1.524013       66.9       71.2
oddeathsdi~1 |         12    18.56787    12.31172   1.879599   39.32456

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    13776.68     8984.81   2272.155   37441.89
        lfpr |         21    60.69048    1.930519       57.1       63.3
oddeathsdi~1 |         20    32.24907    33.21811   1.700863   124.3107
```

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==19
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	5435.775	4410.246	1162.819	20312.54
lfpr	21	60.41905	1.440701	57.3	63.2
oddeathsdi~1	16	47.59662	44.49543	1.341046	161.1243

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==20
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	12131.45	8150.507	3210.474	30778.93
lfpr	21	64.97143	2.008019	59.6	68.2
oddeathsdi~1	20	17.61325	17.43733	1.222942	73.70982

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==21
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	16400.59	10810.44	8761.588	40531.31
lfpr	21	68.37619	1.092201	66.6	70.2
oddeathsdi~1	20	171.4528	132.8395	4.081563	486.1141

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==22
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	14759.96	8847.2	4936.253	29522.77
lfpr	21	66.54762	1.107076	64.9	68.7
oddeathsdi~1	17	118.8074	86.13951	10.4936	305.1967

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==23
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9222.798	6604.305	1808.6	21741.94
lfpr	21	63.08095	2.662821	60.1	68.6
oddeathsdi~1	20	321.3594	182.2984	14.72017	664.2007

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==24
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	4840.352	2532.282	1155.322	11872.37
lfpr	21	71.89048	2.046193	69.6	75.4
oddeathsdi~1	18	92.81315	57.17272	2.554471	187.5807

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==25
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	3799.213	3066.746	421.2965	13689.18
lfpr	21	58.45238	2.565467	54.8	62.4
oddeathsdi~1	20	24.18783	20.26382	2.203935	66.55698

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==26
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9731.87	5533.889	2336.244	22373
lfpr	21	66.15238	2.25136	62.7	70
oddeathsdi~1	20	126.8739	97.15745	2.783206	339.0051

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==27
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	5175.051	1901.077	1217.12	9044.881
lfpr	21	65.21905	1.710737	62.9	68.5
oddeathsdi~1	20	22.08313	15.49289	3.705848	49.27103

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==28
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	2506.912	1014.925	805.2271	5144.164
lfpr	21	71.85714	1.55228	69.4	74.1
oddeathsdi~1	15	11.01556	8.097798	.8904843	24.7921

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==29
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	13555.65	2557.495	8673.275	17934.08
lfpr	21	65.99524	2.94219	61.3	70.4
oddeathsdi~1	19	89.4466	66.16544	10.61849	231.7262

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==30
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	14763.25	10101.75	2338.936	32522.38
lfpr	21	69.88095	1.43165	66.8	72.3
oddeathsdi~1	20	10.74923	8.562291	.6569962	34.22534

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==31
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	9775.196	8991.024	628.1694	29049.46
lfpr	21	65.36667	1.357325	62.9	67
oddeathsdi~1	15	267.9767	256.7262	23.66743	792.227

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	13949.9	4192.67	8243.753	25252.4
lfpr	21	60.21905	2.439799	55.9	63.3
oddeathsdi~1	17	50.46508	36.96933	2.145858	135.7487

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==33
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	8146.165	5480.087	2498.491	21054.29
lfpr	21	61.87143	1.170958	59.1	63.2
oddeathsdi~1	14	825.6361	749.7108	53.70948	2754.496

```
.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==34
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths100k	21	10248.65	5472.578	3538.899	25206.58
lfpr	21	63.79524	2.590265	59	67.5
oddeathsdi~1	19	236.9507	234.5537	5.378391	894.9479

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==35

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    2848.686    2591.916          0   9107.667
        lfpr |         21    71.75714    1.401989         69       74.2
oddeathsdi~1 |          6    2.016552    2.152551   .2686878   5.810489

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==36

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    14097.52    11868.24   2200.019   37164.45
        lfpr |         21    64.94762    2.089885       61.6       67.6
oddeathsdi~1 |         14    231.3224    149.0595   11.34986   535.9906

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==37

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    9947.773    3414.698   3676.502    15278.8
        lfpr |         21    62.64762    1.385503       60.7       64.5
oddeathsdi~1 |         16    47.67898    32.42581   1.167698   99.04891

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==38

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    7938.353    2039.987    3090.64   11758.39
        lfpr |         21    64.39048    2.375901       61.3       68.6
oddeathsdi~1 |         20    98.68598    80.54241     5.0012     271.53
```

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==39

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21     9227.98    8256.144   2048.952   30062.77
        lfpr |         21    63.71429    .9128448       62.3       65.1
oddeathsdi~1 |         13    201.0513    118.9046   9.829557   452.8982

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==40

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    15220.15    7728.995   5427.176   30186.13
        lfpr |         21    66.19048    1.432448       63.7       68.3
oddeathsdi~1 |         13    4.716457    4.559405   .2769856   15.43671

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==41

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    7888.698    6578.971   1971.859   27453.85
        lfpr |         21    61.17143    2.448906       57.9         65
oddeathsdi~1 |         20    74.48391    71.92925   2.237101   228.1024

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==42

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    3063.081     1535.31          0   5180.483
        lfpr |         21    71.22381    1.544637         69       73.3
oddeathsdi~1 |         14    3.438154    2.326424   .2872919   7.862599
```

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==43

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    11559.08    7863.505   1753.242   34815.75
        lfpr |         21    62.48571    1.859109       59.7       65.3
oddeathsdi~1 |         20    74.47096    67.56613   .5468202   204.8701

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==44

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    4285.357    1064.995   1809.544   7264.128
        lfpr |         21    65.75238    1.649127         63       68.4
oddeathsdi~1 |         20    779.9165    756.3671   27.95015   2665.288

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==45

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    12718.38    2528.632   6874.749   15484.99
        lfpr |         21     69.7381    1.932997       66.7       72.6
oddeathsdi~1 |         18    42.99782    32.70984   .9769437   99.91278

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==46

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21     10593.5    5671.571   3608.817   24417.67
        lfpr |         21    69.11905    2.099195       63.4       71.3
oddeathsdi~1 |         12     3.81554    3.781909   .0715648     13.623
```

```
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==47

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    8363.944    4760.965   3518.243   21962.07
        lfpr |         21    67.08571    1.578381       64.2       69.6
oddeathsdi~1 |         12    260.8482    180.2618   24.07195   653.3395

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==48

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    9568.593    1979.759   5412.882   15464.83
        lfpr |         21    65.97143    1.976903       63.1       68.6
oddeathsdi~1 |         20    232.8797    211.8427   17.08229   659.5086

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==49

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    24335.86    15188.94   2766.987   63014.54
        lfpr |         21    54.64762    .7839761       53.3       55.8
oddeathsdi~1 |         20    11.93023    9.710507   .3178935   27.58891

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==50

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    8829.485    5209.114   2084.109   21212.81
        lfpr |         21    69.67619    2.094016       66.1       73.1
oddeathsdi~1 |         19    40.66513    30.43995   2.174382   113.5592

.
. sum oddeaths100k lfpr oddeathsdiff1 if stateid==51

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
oddeaths100k |         21    5771.963    3188.985          0   10386.35
        lfpr |         21    69.29048     2.44702       65.3       71.9
oddeathsdi~1 |         14    11.27776    8.387799   .3345646   23.41114

. gen acoddeaths= 0.1104962* tcmcaremcaidmladj/oddeaths
(12 missing values generated)

.
. sum acoddeaths

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
  acoddeaths |      1,059    9.834574    30.63766   .7407368   623.3339

.
```

```
. sum oddeaths if year==2000 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	92	.	92	92

```
. sum oddeaths if year==2001 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	144	.	144	144

```
. sum oddeaths if year==2002 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	177	.	177	177

```
. sum oddeaths if year==2003 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	234	.	234	234

```
. sum oddeaths if year==2004 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	221	.	221	221

```
.
. sum oddeaths if year==2005 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         285           .        285        285

.
. sum oddeaths if year==2006 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         331           .        331        331

.
. sum oddeaths if year==2007 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         343           .        343        343

.
. sum oddeaths if year==2008 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         365           .        365        365

.
. sum oddeaths if year==2009 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         434           .        434        434

.
. sum oddeaths if year==2010 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         591           .        591        591

.
. sum oddeaths if year==2011 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         669           .        669        669

.
. sum oddeaths if year==2012 & stateid==18

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    oddeaths |          1         673           .        673        673

.
. sum oddeaths if year==2013 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	665	.	665	665

```
.
. sum oddeaths if year==2014 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	729	.	729	729

```
.
. sum oddeaths if year==2015 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	885	.	885	885

```
.
. sum oddeaths if year==2016 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	989	.	989	989

```
.
. sum oddeaths if year==2017 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	1160	.	1160	1160

```
.
. sum oddeaths if year==2018 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	989	.	989	989

```
.
. sum oddeaths if year==2019 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	1036	.	1036	1036

```
.
. sum oddeaths if year==2020 & stateid==18
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	1688	.	1688	1688

```
.
.
. sum oddeaths if year==2000 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	180	.	180	180

```
.
. sum oddeaths if year==2001 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	151	.	151	151

```
.
. sum oddeaths if year==2002 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	196	.	196	196

```
.
. sum oddeaths if year==2003 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	218	.	218	218

```
.
. sum oddeaths if year==2004 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	185	.	185	185

```
.
. sum oddeaths if year==2005 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	211	.	211	211

```
.
. sum oddeaths if year==2006 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	243	.	243	243

```
.
. sum oddeaths if year==2007 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	266	.	266	266

```
.
. sum oddeaths if year==2008 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	324	.	324	324

```
.
. sum oddeaths if year==2009 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	200	.	200	200

```
.
. sum oddeaths if year==2010 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	191	.	191	191

```
.
. sum oddeaths if year==2011 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	243	.	243	243

```
.
. sum oddeaths if year==2012 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	319	.	319	319

```
.
. sum oddeaths if year==2013 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	322	.	322	322

```
.
. sum oddeaths if year==2014 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	402	.	402	402

```
.
. sum oddeaths if year==2015 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	351	.	351	351

```
.
. sum oddeaths if year==2016 & stateid==32
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	349	.	349	349

.
. sum oddeaths if year==2017 & stateid==32

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	332	.	332	332

.
. sum oddeaths if year==2018 & stateid==32

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	338	.	338	338

.
. sum oddeaths if year==2019 & stateid==32

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	394	.	394	394

.
. sum oddeaths if year==2020 & stateid==32

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	1	535	.	535	535

.
. sum oddeaths if year==2000

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	164.6667	194.4271	0	1012

. sum oddeaths if year==2001

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	185.7647	191.8895	0	846

. sum oddeaths if year==2002

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	233.5882	271.1372	0	1453

. sum oddeaths if year==2003

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	253.2745	273.4384	0	1398

```
. sum oddeaths if year==2004
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	269.7255	282.0492	10	1413

```
. sum oddeaths if year==2005
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	292.3529	284.4426	0	1372

```
. sum oddeaths if year==2006
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	343.9412	333.2574	0	1511

```
. sum oddeaths if year==2007
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	363.0588	352.8229	15	1657

```
. sum oddeaths if year==2008
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	383.9608	371.0422	29	1801

```
. sum oddeaths if year==2009
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	400.4314	403.8558	13	1987

```
. sum oddeaths if year==2010
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	413.5098	409.584	18	1929

```
. sum oddeaths if year==2011
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	446.7451	425.8471	10	1938

```
. sum oddeaths if year==2012
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	454.0588	418.6083	0	1719

```
. sum oddeaths if year==2013
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	491.2157	452.8093	11	1948

```
. sum oddeaths if year==2014
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	561.7059	507.8842	31	2106

```
. sum oddeaths if year==2015
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	648.8431	617.3873	27	2698

```
. sum oddeaths if year==2016
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	828.4118	846.7209	42	3613

```
. sum oddeaths if year==2017
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	933.3333	971.7007	35	4293

```
. sum oddeaths if year==2018
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	917.6863	933.4335	28	3237

```
. sum oddeaths if year==2019
```

Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	977.6471	1005.369	39	3771

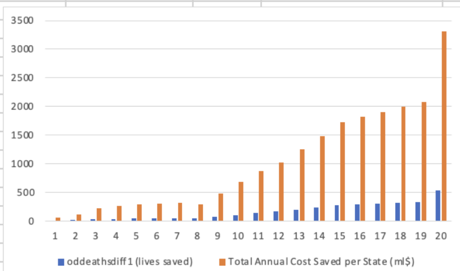
```
. sum oddeaths if year==2020
```

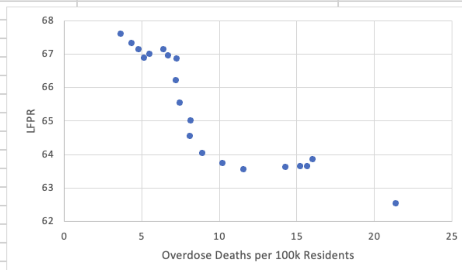
Variable	Obs	Mean	Std. Dev.	Min	Max
oddeaths	51	1345.686	1399.674	46	5508

TREND IN OPIOID DEATHS AND COSTS THAT COULD HAVE BEEN SAVED HAD THERE BEEN NO CHANGE IN THE LABOR FORCE PARTICIPATION SINCE 2000

Average Based on All 51 State

Year	oddeaths100k	lfpr	oddeathsdiff1 (lives saved)	Avg Cost per death (m	Total Annual Cost Saved per State (ml$)	Annual Cost Saving for the Country (ml$)
2001	3.639	67.598	10.896	6.100232	66.46812787	3389.874521
2002	4.358	67.325	20.186	6.100232	123.1392832	6280.103441
2003	4.819	67.127	37.148	6.100232	226.6114183	11557.18234
2004	5.16	66.894	43.419	6.100232	264.8659732	13508.16463
2005	5.505	67.006	48.101	6.100232	293.4272594	14964.79023
2006	6.415	67.133	49.705	6.100232	303.2120316	15463.81361
2007	6.715	66.959	52.875	6.100232	322.549767	16450.03812
2008	7.283	66.859	48.722	6.100232	297.2155035	15157.99068
2009	7.222	66.212	79.133	6.100232	482.7296589	24619.2126
2010	7.471	65.539	112.371	6.100232	685.4891701	34959.94767
2011	8.153	65.004	143.703	6.100232	876.6216391	44707.70359
2012	8.119	64.551	169.065	6.100232	1031.335723	52598.12188
2013	8.908	64.027	206.843	6.100232	1261.790288	64351.30467
2014	10.2	63.737	243.418	6.100232	1484.906273	75730.21992
2015	11.561	63.557	282.359	6.100232	1722.455407	87845.22577
2016	14.259	63.625	299.093	6.100232	1824.53669	93051.37117
2017	15.701	63.649	311.595	6.100232	1900.80179	96940.89129
2018	15.25	63.643	328.626	6.100232	2004.694841	102239.4369
2019	16.033	63.841	341.15	6.100232	2081.094147	106135.8015
2020	21.41	62.531	542.722	6.100232	3310.730112	168847.2357





Overdose Deaths and Costs Avoided by State

stateid	state	oddeaths100	lfpr	oddeathsdiff1	Avg Cost per	Total Annual Cost	Ranking oddeaths100krank		Ranking lfprrank		Ranking oddeathsdiff1rank		Ranking Total Annual Cost Savings	
1	Alabama	4.421	59.59	56.977	6.100232	347.57292	West Virginia	24.336	Minnesota	71.89	California	1856.811	California	11326.978
2	Alaska	7.955	69.033	23.134	6.100232	141.12277	Maryland	16.401	Nebraska	71.857	Florida	1426.657	Florida	8702.9387
3	Arizona	9.678	62.762	223.846	6.100232	1365.5125	Rhode Island	15.22	North Dakota	71.757	New York	825.636	New York	5036.5711
4	Arkansas	5.347	60.343	20.456	6.100232	124.78635	New Hampshi	14.763	South Dakota	71.224	Texas	779.917	Texas	4757.6746
5	California	5.187	64.2	1856.811	6.100232	11326.978	Massachusett	14.76	Iowa	70.662	Illinois	352.429	Illinois	2149.8987
6	Colorado	7.853	70.124	210.607	6.100232	1284.7516	DiC	14.355	Colorado	70.124	Michigan	321.359	Michigan	1960.3645
7	Connecticut	12.446	66.952	39.055	6.100232	238.24456	Ohio	14.098	New Hampshi	69.881	Georgia	269.267	Georgia	1642.5912
8	Delaware	13.543	64.31	22.419	6.100232	136.7611	New Mexico	13.95	Utah	69.738	New Jersey	267.977	New Jersey	1634.7219
9	DiC	14.355	68.829	2.39	6.100232	14.579554	Kentucky	13.777	Wisconsin	69.676	Virginia	260.848	Virginia	1591.2333
10	Florida	9.445	61.257	1426.657	6.100232	8702.9387	Nevada	13.556	Wyoming	69.291	North Carolin	236.95	North Carolin	1445.45
11	Georgia	5.549	65.214	269.267	6.100232	1642.5912	Delaware	13.543	Kansas	69.152	Washington	232.88	Washington	1420.622
12	Hawaii	4.365	63.552	74.098	6.100232	452.01499	Utah	12.718	Vermont	69.119	Ohio	231.322	Ohio	1411.1179
13	Idaho	4.874	66.286	21.366	6.100232	130.33756	Connecticut	12.446	Alaska	69.033	Arizona	223.846	Arizona	1365.5125
14	Illinois	9.183	66.181	352.429	6.100232	2149.8987	Maine	12.131	DiC	68.829	Colorado	210.607	Colorado	1284.7516
15	Indiana	7.359	65.433	40.558	6.100232	247.41321	Tennessee	11.559	Maryland	68.376	Pennsylvania	201.051	Pennsylvania	1226.4577
16	Iowa	4.064	70.662	12.518	6.100232	76.362704	Vermont	10.593	Virginia	67.086	Maryland	171.453	Maryland	1045.9031
17	Kansas	4.493	69.152	18.568	6.100232	113.26911	North Carolin	10.249	Connecticut	66.952	Missouri	126.874	Missouri	773.96083
18	Kentucky	13.777	60.69	32.249	6.100232	196.72638	Oklahoma	9.948	Massachusett	66.548	Massachusett	118.807	Massachusett	724.75026
19	Louisiana	5.436	60.419	47.597	6.100232	290.35274	New Jersey	9.775	Idaho	66.286	Oregon	98.686	Oregon	602.0075
20	Maine	12.131	64.971	17.613	6.100232	107.44339	Missouri	9.731	Rhode Island	66.19	Minnesota	92.813	Minnesota	566.18083
21	Maryland	16.401	68.376	171.453	6.100232	1045.9031	Arizona	9.678	Illinois	66.181	Nevada	89.447	Nevada	545.64745
22	Massachusett	14.76	66.548	118.807	6.100232	724.75026	Washington	9.569	Missouri	66.152	South Carolin	74.484	South Carolin	454.36968
23	Michigan	9.223	63.081	321.359	6.100232	1960.3645	Florida	9.445	Nevada	65.995	Tennessee	74.47	Tennessee	454.28428
24	Minnesota	4.84	71.89	92.813	6.100232	566.18083	Pennsylvania	9.227	Washington	65.971	Hawaii	74.098	Hawaii	452.01499
25	Mississippi	3.799	58.452	24.188	6.100232	147.55241	Michigan	9.223	Texas	65.752	Alabama	56.977	Alabama	347.57292
26	Missouri	9.731	66.152	126.874	6.100232	773.96083	Illinois	9.183	Indiana	65.433	New Mexico	50.465	New Mexico	307.84821
27	Montana	5.175	65.219	22.083	6.100232	134.71142	Wisconsin	8.829	New Jersey	65.367	Oklahoma	47.679	Oklahoma	290.85296
28	Nebraska	2.507	71.857	11.016	6.100232	67.200156	Virginia	8.364	Montana	65.219	Louisiana	47.597	Louisiana	290.35274
29	Nevada	13.556	65.995	89.447	6.100232	545.64745	New York	8.146	Georgia	65.214	Utah	42.998	Utah	262.29778
30	New Hampshi	14.763	69.881	10.749	6.100232	65.571394	Alaska	7.955	Maine	64.971	Wisconsin	40.665	Wisconsin	248.06593
31	New Jersey	9.775	65.367	267.977	6.100232	1634.7219	Oregon	7.938	Ohio	64.948	Indiana	40.558	Indiana	247.41321
32	New Mexico	13.95	60.219	50.465	6.100232	307.84821	South Carolin	7.889	Oregon	64.39	Connecticut	39.055	Connecticut	238.24456
33	New York	8.146	61.871	825.636	6.100232	5036.5711	Colorado	7.853	Delaware	64.31	Kentucky	32.249	Kentucky	196.72638
34	North Carolin	10.249	63.795	236.95	6.100232	1445.45	Indiana	7.359	California	64.2	Mississippi	24.188	Mississippi	147.55241
35	North Dakota	2.49	71.757	2.017	6.100232	12.304168	Wyoming	5.772	North Carolin	63.795	Alaska	23.134	Alaska	141.12277
36	Ohio	14.098	64.948	231.322	6.100232	1411.1179	Georgia	5.549	Pennsylvania	63.714	Delaware	22.419	Delaware	136.7611
37	Oklahoma	9.948	62.648	47.679	6.100232	290.85296	Louisiana	5.436	Hawaii	63.552	Montana	22.083	Montana	134.71142
38	Oregon	7.938	64.39	98.686	6.100232	602.0075	Arkansas	5.347	Michigan	63.081	Idaho	21.366	Idaho	130.33756
39	Pennsylvania	9.227	63.714	201.051	6.100232	1226.4577	California	5.187	Arizona	62.762	Arkansas	20.456	Arkansas	124.78635
40	Rhode Island	15.22	66.19	4.716	6.100232	28.768694	Montana	5.175	Oklahoma	62.648	Kansas	18.568	Kansas	113.26911
41	South Carolin	7.889	61.171	74.484	6.100232	454.36968	Idaho	4.874	Tennessee	62.486	Maine	17.613	Maine	107.44339
42	South Dakota	3.064	71.224	3.438	6.100232	20.972598	Minnesota	4.84	New York	61.871	Iowa	12.518	Iowa	76.362704
43	Tennessee	11.559	62.486	74.47	6.100232	454.28428	Kansas	4.493	Florida	61.257	West Virginia	11.93	West Virginia	72.775768
44	Texas	4.285	65.752	779.917	6.100232	4757.6746	Alabama	4.421	South Carolin	61.171	Wyoming	11.278	Wyoming	68.798416
45	Utah	12.718	69.738	42.998	6.100232	262.29778	Hawaii	4.365	Kentucky	60.69	Nebraska	11.016	Nebraska	67.200156
46	Vermont	10.593	69.119	3.816	6.100232	23.278485	Texas	4.285	Louisiana	60.419	New Hampshi	10.749	New Hampshi	65.571394
47	Virginia	8.364	67.086	260.848	6.100232	1591.2333	Iowa	4.064	Arkansas	60.343	Rhode Island	4.716	Rhode Island	28.768694
48	Washington	9.569	65.971	232.88	6.100232	1420.622	Mississippi	3.799	New Mexico	60.219	Vermont	3.816	Vermont	23.278485
49	West Virginia	24.336	54.648	11.93	6.100232	72.775768	South Dakota	3.064	Alabama	59.59	South Dakota	3.438	South Dakota	20.972598
50	Wisconsin	8.829	69.676	40.665	6.100232	248.06593	Nebraska	2.507	Mississippi	58.452	DiC	2.39	DiC	14.579554
51	Wyoming	5.772	69.291	11.278	6.100232	68.798416	North Dakota	2.49	West Virginia	54.648	North Dakota	2.017	North Dakota	12.304168

	Overdose Deaths #					
Year	OD-US	OD-KY	OD-NM	LFPR-US	LFPR-KY	LFPR-NM
2000	165	92	180	67.8549	63.4	63
2001	186	144	151	67.6039	62.9	63.2
2002	234	177	196	67.3471	62.1	63.1
2003	253	234	218	67.1549	62.3	63.2
2004	270	221	185	66.9294	62	63
2005	292	285	211	67.0549	62.1	63.1
2006	344	331	243	67.1784	62.4	62.6
2007	363	343	266	67.0059	62.2	62.1
2008	384	365	324	66.9216	61.6	62.3
2009	400	434	200	66.2471	62	61.2
2010	414	591	191	65.5333	61.6	59.5
2011	447	669	243	64.9863	61.1	58.4
2012	454	673	319	64.5235	60.8	58.3
2013	491	665	322	64.0177	60.3	58.1
2014	562	729	402	63.7216	58.5	58.1
2015	649	885	351	63.5647	57.5	58.3
2016	828	989	349	63.6216	58.3	58.4
2017	933	1160	332	63.6471	58.8	58.3
2018	918	989	338	63.6412	58.6	57.8
2019	978	1036	394	63.8471	58.7	58.1
2020	1346	1688	535	62.5216	57	56

	Labor Force Participation Rates		
Year	LFPR-US	LFPR-KY	LFPR-NM
2000	67.8549	63.4	63
2001	67.6039	62.9	63.2
2002	67.3471	62.1	63.1
2003	67.1549	62.3	63.2
2004	66.9294	62	63
2005	67.0549	62.1	63.1
2006	67.1784	62.4	62.6
2007	67.0059	62.2	62.1
2008	66.9216	61.6	62.3
2009	66.2471	62	61.2
2010	65.5333	61.6	59.5
2011	64.9863	61.1	58.4
2012	64.5235	60.8	58.3
2013	64.0177	60.3	58.1
2014	63.7216	58.5	58.1
2015	63.5647	57.5	58.3
2016	63.6216	58.3	58.4
2017	63.6471	58.8	58.3
2018	63.6412	58.6	57.8
2019	63.8471	58.7	58.1
2020	62.5216	57	56