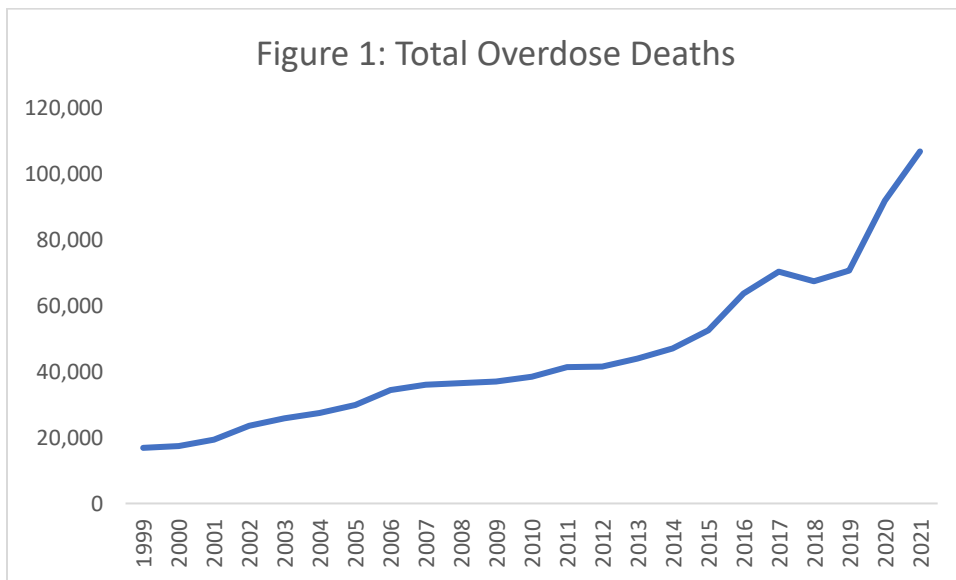
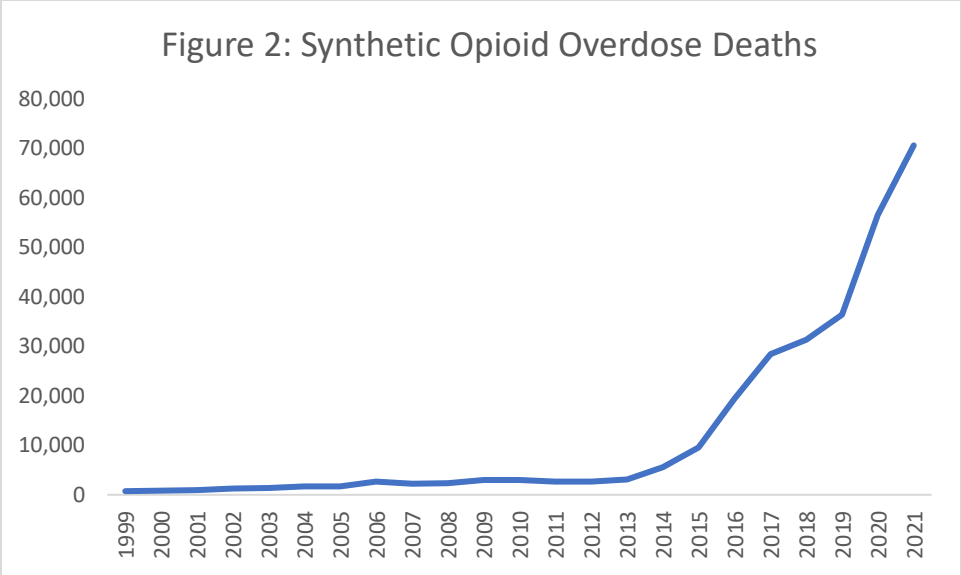


Provisional Deaths in 2022 – Opioids Deaths are Still Ravaging America

Introduction

Based on the recently published 2022 US provisional deaths, drug overdose deaths continue to be a national tragedy. The CDC death data is not final as indicated by the term “provisional” but do provide some interesting insights. In aggregate, deaths declined from 2021 to 2022 but drug overdose deaths appear to remain above 100,000 Americans per year. In 1999 opioid deaths in the US were only 16,849 (HHS(a), 2023). That figure rose by over 500% to about 107,000 in 2021 (National Center for Health Statistics, 2023). Figure 1 below, summarizes total opioid deaths from 1999 to 2021 per the CDC. There has been a steep acceleration in deaths since 2015 and based on figure 2 below, this recent surge appears to be driven by fentanyl. Fentanyl is a synthetic opioid that is typically produced in China (Macy, 2018). Based on the data, in 2021, synthetic opioids accounted for 66% of all overdose deaths when they were about 0% before 2014.





Sources: National Center for Health Statistics. (2023). Monthly Provisional Counts of Deaths by Select Causes, 2020-2023. CDC. Date accessed March 20, 2023. Available from <https://data.cdc.gov/d/9dzk-mvmi>.

To come back to aggregate US mortality, table 1 below, summarizes the CDC’s 2022 provisional death numbers compared to 2021 deaths. The 2022 numbers are subject to change as some causes of deaths can be difficult for medical practitioners to definitively determine. Overdose deaths are one such example of a cause that is difficult to determine. The CDC only reports 8 months of data for these causes.

Table 1: US Deaths 2021 vs. 2022		
	Total Deaths	Drug Overdoses
Deaths 8 months 2022	2,198,783	70,638
Deaths 8 months 2021	2,249,889	72,711
Delta %	-2.3%	-2.9%
Annualized 2022 Deaths	3,298,175	105,957
Total Reported 2021 Deaths	3,471,732	107,465

Deaths are down both in aggregate and for drug related deaths from 2021 to 2022. However, there is no reason to celebrate. My estimated drug overdose deaths (70,638 x 12/8) are still above 100,000 Americans which is about triple the level experienced in 2010. Based on the state data from the CDC it appears that overdose death trends vary significantly by state. Table 2 below, summarizes 2022 data from a select few states. West Virginia which has the highest drug overdose death rate in the nation, appears to have seen an encouraging decline in 2022 as preliminary data indicate the state drug death rate is down by over 10% from 2021 to 2022. This could be due to reporting lags. However, it could also be due to recent interventions undertaken by West Virginia’s state government (WVDHHR). Maryland, Ohio and West Virginia are also showing significant reductions in overdose deaths for 2022. Concerningly, Maine drug deaths per

100,000 are up by 11.4%. Unsurprisingly Maine’s record 2022 overdose deaths are driven by Fentanyl. Further, it appears that Maine is struggling to increase usage of Naloxone (Russel, 2023) and Maine’s uptick in overdoses is especially concentrated in rural counties.

Table 2: State Overdose Deaths per 100,000			
	2021	2022	Delta
Total	32.1	31.9	-0.7%
Maine	42.5	47.3	11.4%
Maryland	43.5	39.2	-9.7%
Ohio	46.8	43.1	-7.8%
Virginia	29.7	25.8	-13.4%
West Virginia	81.9	69.3	-15.4%

While this paper is about aggregate mortality in 2022, I will mainly be focusing on drug overdoses as drug overdoses continue to be a gigantic contributor to US excess mortality. I will first discuss how different causes of deaths have increased or decreased for key causes of deaths. After focusing at the aggregate US mortality, I will move on to drug overdoses. I discuss provisional data on a state level. In particular, I will focus on two states; West Virginia and Maine. West Virginia has the highest drug death rates in the US but appears to have seen improvements in 2022 while Maine drug deaths appear to have increased in 2022.

Aggregate 2022 Mortality

In analyzing mortality for 2022, I have pulled from the CDC’s provisional mortality data. These figures are not final and certain causes of death (e.g. drug overdoses) only include 8 months’ worth of data because certain deaths are more difficult to verify. Table 1, also presented in the introduction summarizes the deaths for 2022 and 2021. Mortality in aggregate appears to be down by 2.3% from 2021. In addition, 2022 drug overdose deaths appear to be lower. However, 2022 drug deaths are still roughly 50% higher than the level experienced in 2019. The reason aggregate deaths are lower from 2021 is largely driven by fewer Covid-19 deaths experienced in 2022. However, the indirect impacts of the pandemic appear to have led to worsened health in the US. How long adverse non-covid mortality persists is uncertain and should be a major concern for public health departments.

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As for other causes of deaths, Table 3 summarizes 2022 cause of death compared to 2021. Overall, diabetes deaths, car accidents, homicides, accidents and Covid-19 deaths were all down from 2021 to 2022. However, most other causes of deaths appear to have increased from 2021 to 2022. In particular flu deaths increased 11%, kidney diseases deaths increased by 6%, and chronic lower respiratory diseases increased by 3.2%. “Symptoms, Signs and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified” increased by 56%. It is unclear to me the underlying deaths included in this line. It could be driven by the fact that 2022 deaths are not yet finalized so deaths classified in this category could get reclassified after the 2022 deaths are finalized by the CDC but these 20,000 extra deaths are not insignificant.

Table 3: CDC US Cause of Death 2022 vs. 2021			
	2021 Deaths	2022 Deaths	Delta
Malignant Neoplasms	606,030	608,569	0.4%
Diabetes Mellitus	103,419	100,858	-2.5%
Alzheimer Disease	119,442	120,034	0.5%
Influenza and Pneumonia	42,012	46,662	11.1%
Chronic Lower Respiratory Diseases	142,449	146,993	3.2%
Other Diseases of Respiratory System	45,953	48,036	4.5%
Kidney Diseases	54,432	57,903	6.4%
Symptoms, Signs and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified	34,998	54,461	55.6%
Heart Disease	696,770	700,180	0.5%
Cerebrovascular Diseases	163,114	165,325	1.4%
Accidents (Unintentional Injuries)	226,987	224,229	-1.2%
Motor Vehicle Accidents	47,399	45,228	-4.6%
Intentional Self-Harm (Suicide)	48,148	49,883	3.6%
Assault (Homicide)	26,113	25,085	-3.9%
COVID-19 (Underlying Cause of Death)	417,868	187,028	-55.2%

State Drug Overdoses Analysis

I will now focus on two states, West Virginia and Maine. West Virginia has the highest opioid death rate in the US but appears to have taken effective steps to reduce the footprint of the opioid epidemic within its state boundaries. West Virginia was targeted hard by Purdue Pharma in the late 20th century and early 21st century. Eric Eyre found that drug distributors pumped 780 M doses of opioids in West Virginia from, 2009-2015 (American Overdose) while West Virginia's population is only 2 million (CDC(a)). Maine on the other hand, appears to have seen elevated opioid deaths from 2021 to 2022.

West Virginia drug overdoses appear to have trended downwards in 2022 by roughly 15.4% when annualizing the 8 months of CDC provisional data (CDC(a)). West Virginia's drug deaths per 100,000 decreased from 81.9 to 69.3 deaths per 100,000. West Virginia still has the highest death rate in the nation but a 15% reduction in the death rate is encouraging. West Virginia has implemented various programs since 2021 to combat the epidemic. The programs include free naloxone (commonly referred to as "Narcan") distribution, expansion of treatment and recovery services, syringe service programs, stigma campaigns and improved coordination between regional agencies (WVDHHR). Naloxone distribution in particular has greatly expanded since 2020, roughly quadrupling since 2020 which could explain part of the downward trend in deaths (Hessler, 2022). Narcan/Naloxone is credited with the ability to almost instantly reverse overdose upon injection (Macey, 2018). West Virginia's programs were funded by settlements from the profiteers of the Opioid epidemic. As of year-end 2022, settlements equate to roughly \$874 million (Siegler, 2022).

Roughly 25% of settlements will be distributed to local governments where local governments will broadly be given discretion on how to distribute these funds. However, the core strategies outlined per the West Virginia First Memorandum of Understanding are Naloxone distribution, medication assisted treatment ("MAT") which is considered the gold treatment standard (Macy, 2018), pregnancy support for opioid addicted mothers, neonatal abstinence, recovery services, treatment for the incarcerated, prevention, research and law enforcement (Office of West Virginia Attorney General, 2022). Distributions to local governments will be based on population as well impacts from opioids. 72.5% of funds will go to the non-profit organization, The West Virginia First Foundation (WVFF) (Siegler, 2022). West Virginia's Attorney General Morrissey states the three key areas that the WVFF will fund are increasing the knowledge base of substance abuse (prevention, research and education), law enforcement to curb supply and funding for recovery (WSAZ News Staff). In addition, \$27 million is allocated for Narcan distribution (Siegler, 2022).

Now let's move on to Maine. The drug overdose deaths experienced in 2022 for Maine stands at 716, a 13% increase from 2021 overdose deaths which stood at 631 (Russel, 2023).

Concerningly overdose deaths may have accelerated in the fourth quarter of 2022 (Russel, 2023). Despite increased Narcan availability, there has not been a significant uptick in usage to match increasing overdoses. It appears Maine is experiencing barriers to treatment of opioid abuse that include stigma, insurance, lack of time, lack of transportation and lack of housing (Bader, 2022). These problems appear especially prevalent in rural Maine.

The table below summarizes the death rates for Maine’s counties from 2019 to 2022. It should be noted that I used CDC provisional data by Maine county to estimate death rates for 2022. In addition, the map below summarizes Maine’s counties. With the exception of Waldo County, it appears that in general Maine’s northern and larger counties have been hit harder by opioid deaths than other counties. This is consistent with the story cited above regarding the difficulties of treating rural communities. Perhaps this is driven by rural counties having lower healthcare access. The general picture is that Maine drug death rates are elevated from 2021 to 2022 and some counties are experiencing rates that rival those experienced in West Virginia.

Table 4: Maine County Level Drug Overdose Deaths per 100,000				
County	2019	2020	2021	2022
Maine	24.8	33.5	42.5	47.3
Cumberland County, ME	26.4	27.2	32.1	38.8
Kennebec County, ME	31.1	35.8	46.6	51.8
Penobscot County, ME	32.2	51.4	64.8	66.8
York County, ME	25.0	28.7	30.8	46.1
Androscoggin County, ME	29.6	38.7	60.3	54.0
Aroostook County, ME	16.4	28.4	56.8	56.1
Franklin County, ME	0.0	0.0	0.0	55.6
Hancock County, ME	0.0	27.2	30.3	34.7
Knox County, ME	0.0	40.0	29.2	40.2
Lincoln County, ME	0.0	28.8	44.7	0.0
Oxford County, ME	0.0	22.4	37.5	35.8
Piscataquis County, ME	0.0	0.0	58.3	0.0
Sagadahoc County, ME	0.0	0.0	0.0	0.0
Somerset County, ME	27.7	39.5	45.5	59.3
Waldo County, ME	0.0	0.0	45.1	60.1
Washington County, ME	31.9	63.5	80.3	67.5



Source: *Maine County Map with County Seat Cities*. (n.d.). Geology.com. Retrieved from <https://geology.com/county-map/maine.shtml>.

Conclusion

Despite Covid-19 deaths being drastically lower in 2022, the picture for American mortality is not promising. Deaths for many major causes increased from 2021 to 2022. Despite opioid deaths appearing to have decreased from 2021 to 2022 they are still well above pre-pandemic levels (and of course well above pre-OxyContin 1995 levels). While promising results have been seen from West Virginia's holistic use of settlement funds to fund treatment, prevention, research, education, pregnancy services, etc., the drug death rates for West Virginia and the nation as a whole are still too high. Drug overdoses do not just cause loss of life, they ravage communities. Overdoses are now the leading cause for deaths for Americans under the age of 50 (Harris, et al, 2021). Further, addiction can lead to friends stealing from friends, family stealing from family, parentless children, childless parents, the hollowing out of our communities and now more than ever, death (Macy, 2018). Thanks to fentanyl and heroin this epidemic is now ever more deadly. Like many complex problems, there are likely no simple answers. However, doing nothing is not acceptable or humane.

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