

# US Incarcerated Population: Exploring Factors Leading to Violent Death

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## 1. Background

**VIOLENT DEATH AMONG THE INCARCERATED POPULATION** is less frequent than nonviolent death.<sup>1</sup> Previous literature indicated that only 33.3% of violent death patients received the indicated surgical care during incarceration.<sup>1</sup> With little other research performed surrounding violent death during incarceration, this populations’ access and utilization to healthcare is a significant question.

Additionally, the estimated total incarcerated population of over 2.1 million in 2016 and **high rates of physical violence** in correctional facilities compel further exploration into the patterns and situations surrounding violent death is warranted.<sup>2,4</sup>

### STUDY AIMS

- Categorize violent death during incarceration based on suicide, homicide, and legal intervention
- Better quantify violent death during incarceration based on factors such as age, sex, race/ethnicity, and weapon type
- Compare access to community health resources with the general population

## 2. Methods

**NATIONAL VIOLENT DEATH REPORTING SYSTEM (NVDRS)** is a national, state collected, deidentified secondary data set from the CDC.<sup>3</sup> This dataset reports demographic information and circumstances of violent death that occur in the US.<sup>3</sup>

NVDRS primary data sources from all 50 states<sup>3</sup>

- Law enforcement reports
- Death certificates
- Coroner/medical examiner report

Then, the NVDRS team abstracts over 600 data points these primary sources.<sup>3</sup>

### TWO DATA GROUPS

#### Demographic features of violent death population

- Death reports from 2003-2017
- Included demographics factors on age, sex, race/ethnicity, weapon type, level of healthcare
- Victims were grouped into mode of death: suicide, homicide, or legal intervention (LI)
  - » *Legal intervention:* individual killed by sheriff, deputy, guard, or other staff member while in custody

#### Level of care comparison

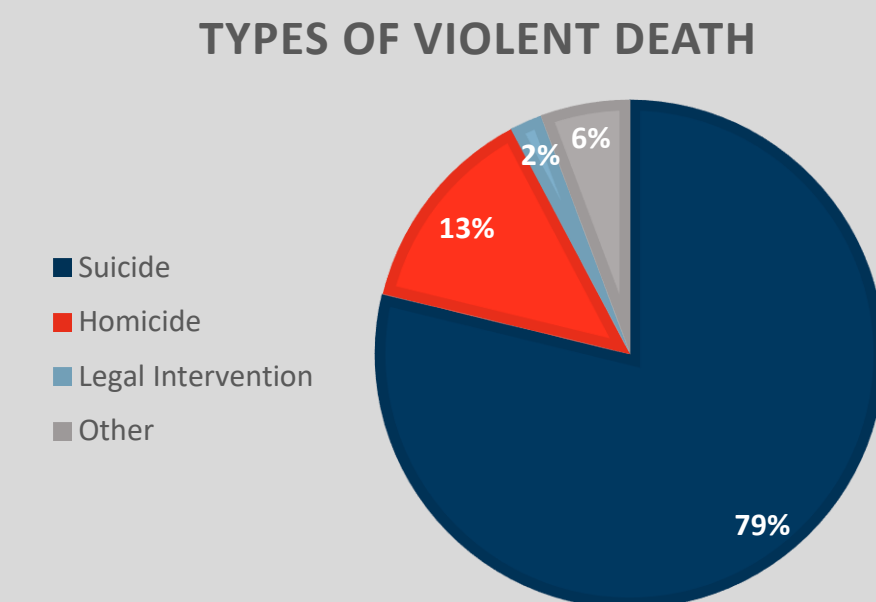
- Death reports from 2015-2017
- Comparison of community healthcare utilization between incarcerated and general population victims by the highest level of care achieved
  - » *Levels of care included:* no care, EMS, Dead on arrival to ED, Emergency Department, Hospital Admission

- Propensity score matching analysis
  - » Matching criteria
    - Age, sex, race/ethnicity, state, weapon type
    - Groups looked similar after matching
  - » Excluded states that did not include full reporting in the NVDRS database

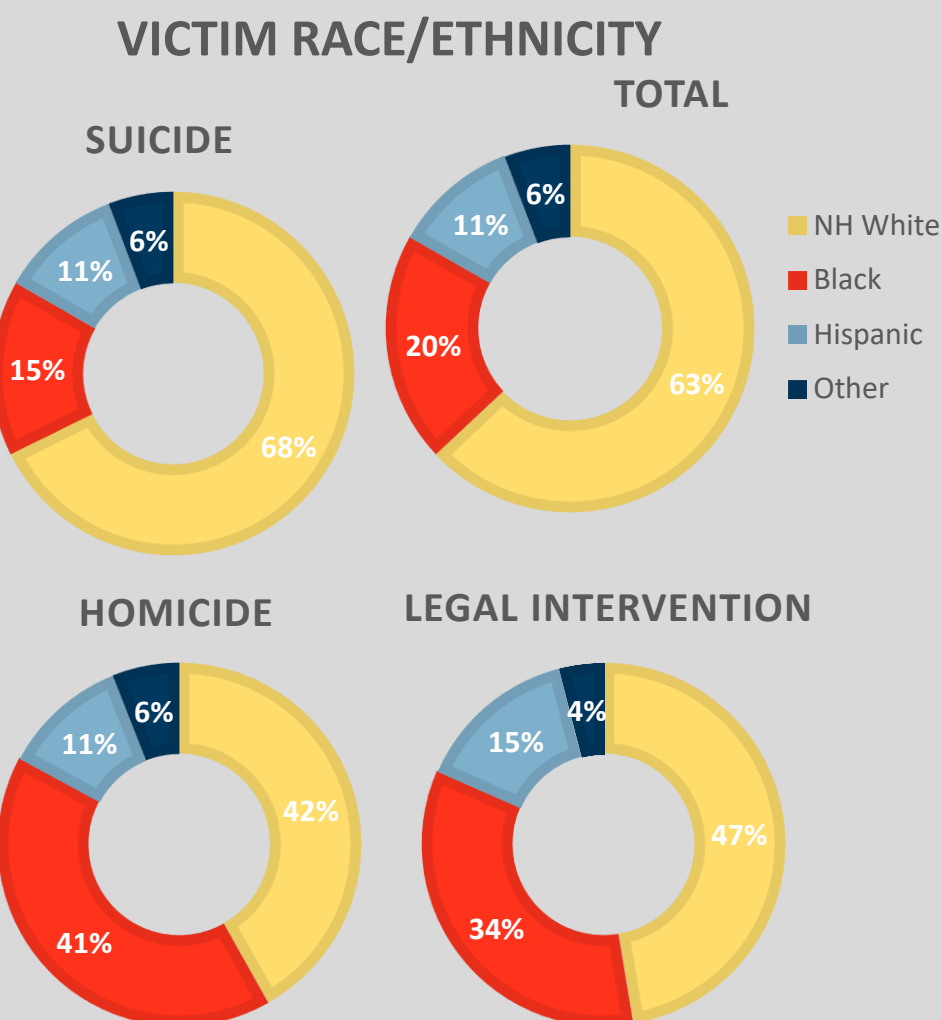
## 3. Results

#### DESCRIPTIVE ANALYSIS OF VIOLENT DEATH

- From 2003 to 2017 there was a recorded total of 3729 violent deaths in US correctional facilities
- Of those deaths, 78.5% were suicides, 13.5% homicides, and 2.0% legal intervention (LI) deaths

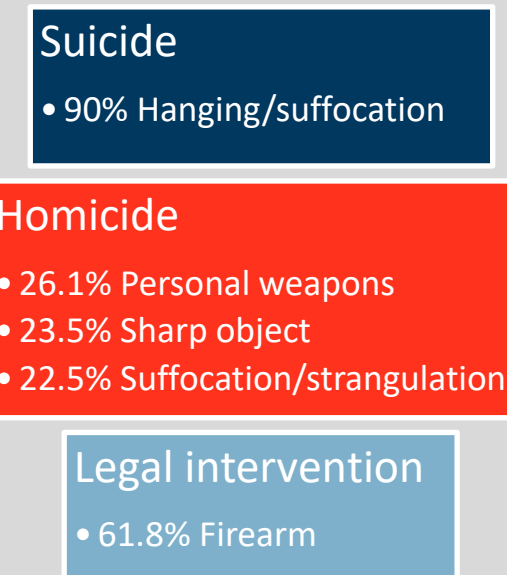


- The race/ethnicity of victims varies depending upon the type of violent death
- There is a greater proportion of minority race/ethnicity victims in homicide and legal intervention groups compared to the overall deaths and the suicide group



#### MOST COMMON WEAPON PER TYPE OF DEATH

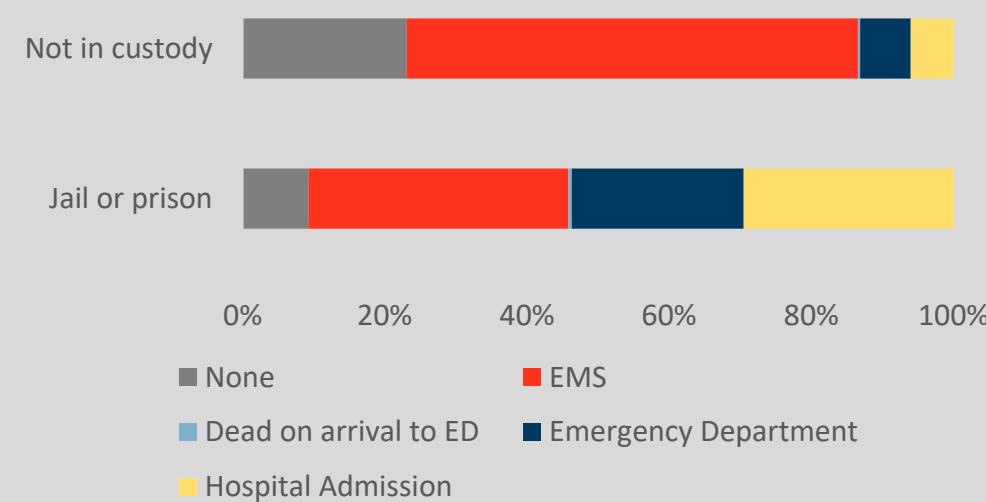
- Weapon type varied between the three modes of death
- Suicide and legal intervention deaths both had one weapon type comprising the majority of lethal means
- Conversely, the homicide group had multiple different lethal weapons



#### LEVEL OF COMMUNITY CARE COMPARISON

- Community healthcare utilization is equal or higher for the incarcerated population when compared to the general population after matching
- Suicides were significantly more likely to receive a higher level of community care than the general population after matching (p<0.001)

#### HIGHEST LEVEL OF CARE COMPARISON FOR SUICIDES (AFTER PROPENSITY SCORE MATCHING)



- Homicide patients had no significant difference after matching in receiving higher levels of community care after matching (p=0.5)

## 4. Conclusions

**THE RACE AND ETHNICITY** of victims differed amongst the three modes of death. Although suicide made up the largest proportion of violent deaths during incarceration, **minorities were disproportionately represented as victims of homicide and legal intervention** deaths compared to the total deaths and suicides. Likely, there are additional factors requiring further investigation that specifically increase their risk for this type of violent death compared to suicide in the incarcerated setting when compared to Non-Hispanic White individuals.

**WEAPON TYPES** varied across the three groups but suicide and legal intervention each had one major lethal means, hanging/suffocation and firearms, respectively. Alternatively, **homicide weapons were more varied** which suggested the lack of lethal resources in the incarcerated setting. The choice of weapon type is likely indicative of the resources available for the perpetrator in that setting.

**COMMUNITY HEALTHCARE UTILIZATION** for the incarcerated population is equal or higher when compared to the general population. Specifically, suicides received a higher level of community care likely because their attempt was witnessed making response times quicker. Our findings suggest that **violence prevention methods** should be more heavily emphasized in correctional facilities to prevent traumatic death of this population. This could include further risk factor analysis that predisposes particular individuals to violent death in this setting.

### LIMITATIONS

The NVDRS data limited the analysis that we could perform because it does not include information about the population that is at risk.

Variation and bias in reporting could affect the validity of the data due to lack of mandatory autopsies or reporting in states thus underestimating the burden of violent death on this population.

## 5. References

1. Busko, A., Soe-Lin, H., Barber, C., Rattan, R., King, R., & Zakrisson, T. L. (2019). Postmortem Incidence of Acute Surgical-and Trauma-Associated Pathologic Conditions in Prison Inmates in Miami Dade County, Florida. *JAMA surgery*, 154(1), 87-88.
2. Bureau of Justice Statistics. (2019, August). Prisoners in 2017. [https://www.bjs.gov/content/pub/pdf/p17\\_sum.pdf](https://www.bjs.gov/content/pub/pdf/p17_sum.pdf).
3. National Violent Death Reporting System|NVDRS|Violence Prevention|Injury Center|CDC. (2019, November 7). Retrieved from <https://www.cdc.gov/violenceprevention/datasources/nvdrs/index.html>
4. Wolff, N., Blitz, C. L., Shi, J., Siegel, J., & Bachman, R. (2007). Physical violence inside prisons: Rates of victimization. *Criminal justice and behavior*, 34(5), 588-599.

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