

Non-Self-Inflicted Vs. Self-Inflicted Facial Gunshot Wounds: A Comparison of Insurance Status and Race with Mortality and Cost at UMCNO

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Background

- From the mid-1960s to the present, gun violence has continued to rise throughout the country.
- According to the Centers for Disease Control and Prevention (CDC) from 1999-2018, suicide in the United States was in the top 5 causes of death for age ranges 10-54. Age ranges 55-64 were in the top 8. Suicide by firearm was the main method for age ranges 15-64.
- Homicide was in the top 4 causes of death for age ranges 1-34. Age ranges 35-44 were in the top 6. Homicide by firearm was the leading cause.
- Louisiana ranked #1 in the entire country for age-adjusted death rate secondary to firearms from 2001-2018 with 2 main causes being suicide and homicide.
- In Louisiana during this time frame, suicide and homicide death rates have increased across all ages and genders.

Methods

- Patients with GSWs were evaluated on a range of demographic and output variables including non-self-inflicted and self-inflicted facial GSWs (N-SIGSW & SIGSW respectively), age, gender, race, mortality, insurance type, and cost.
- A student's t-test (2-tailed, $\alpha = 0.05$) was used for comparisons between uninsured vs. insured patient cost data and Black vs. White patient cost data.
- A chi-square (χ^2) test of independence (df = 1, $\alpha = 0.05$) was performed to examine the relation between uninsured vs. insured patient mortality data and Black vs. White patient mortality data.
- A retrospective sample of 152 patients who met inclusion criteria was obtained from UMCNO from 07/01/2012 to 06/30/2017. Ages ranged from 4-88.
- 106 patients were categorized as N-SIGSW (70%). 46 patients were categorized as SIGSW (30%).

References

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. Available from URL: <https://www.cdc.gov/injury/wisqars/>

Table 1: Raw Data

Category	N-SIGSW		SIGSW	
	N	%	N	%
Age				
1-9	2	1.89%	0	0.00%
10-19	17	16.04%	4	8.70%
20-29	53	50.00%	6	13.04%
30-39	20	18.87%	8	17.39%
40-49	8	7.55%	11	23.91%
50-59	4	3.77%	8	17.39%
60-69	1	0.94%	2	4.35%
70-79	1	0.94%	5	10.87%
80-89	0	0.00%	2	4.35%
Total	106		46	
Gender				
Female	9	8.49%	4	8.70%
Male	97	91.51%	42	91.30%
Race				
Black	89	83.96%	5	10.87%
White	11	10.38%	39	84.78%
Hispanic	5	4.72%	1	2.17%
Asian	0	0.00%	1	2.17%
Other	1	0.94%	0	0.00%
Mortality				
Lived	81	76.42%	22	47.83%
Died	25	23.58%	24	52.17%
Insurance Type				
Medicaid	55	51.89%	15	33.33%
Medicare	5	4.72%	12	26.67%
Freecare	5	4.72%	0	0.00%
Private	4	3.77%	11	24.44%
Self Pay	0	0.00%	0	0.00%
Uninsured	37	34.91%	8	17.78%
Cost				
Average	12.8 (\$10k)		17.1 (\$10k)	
Standard Deviation	13.4 (\$10k)		24.1 (\$10k)	
Median	8.2 (\$10k)		5.6 (\$10k)	

Results

- The relation between uninsured vs. insured patient mortality was significant for both N-SIGSW and SIGSW groups: $\chi^2 (1, N = 106) = 19.8$, $p = << 0.05$ and $\chi^2 (1, N = 46) = 4.8$, $p = 0.03$ respectively.
- The relation between Black vs. White mortality was not significant for N-SIGSW or SIGSW patients: $\chi^2 (1, N = 100) = 1.4$, $p = 0.25$ and $\chi^2 (1, N = 44) = 0.34$, $p = 0.56$ respectively.
- For N-SIGSW patients, the cost of treatment for uninsured individuals was not significantly different than those who were insured (Mean: \$102,748 vs. 142,160, $p = 0.17$).
- For SIGSW patients, cost for uninsured patients was significantly different from insured patients (Mean: \$45,418 vs. 199,231, $p = 0.001$).
- The cost of treatment for Black individuals was not significantly different than White individuals for either N-SIGSW or SIGSW groups: (Mean: \$133,211 vs. 104,193, $p = 0.42$) and (Mean: \$113,555 vs. 183,357, $p = 0.29$) respectively.

Table 2: Statistical Analysis of Mortality

Category	N-SIGSW		SIGSW	
	Mortality	p-value	Mortality	p-value
Uninsured	18 (20.8%)	<< 0.05	7 (15.2%)	0.03
Insured	7 (0.9%)		17 (37.0%)	
Black	22 (20.8%)	0.25	2 (4.3%)	0.34
White	1 (0.9%)		21 (45.7%)	

Table 3: Statistical Analysis of Cost

Category	N-SIGSW				SIGSW			
	Cost in 100k	Mean	Median	p-value	Cost in 100k	Mean	Median	p-value
Uninsured	38.0 (28.2%)	1.0	0.3	0.17	3.6 (4.8%)	0.5	0.3	0.001
Insured	96.7 (71.8%)	1.4	1.0		71.7 (94.2%)	2.0	0.8	
Total	134.7				75.4			
Black	119 (92.2%)	1.3	0.9	0.42	4.5 (6.0%)	1.1	1.0	0.290
White	10 (7.8%)	1.0	0.7		70 (94.0%)	1.8	0.6	
Total	129.0				74.5			

Insurance Status and Mortality

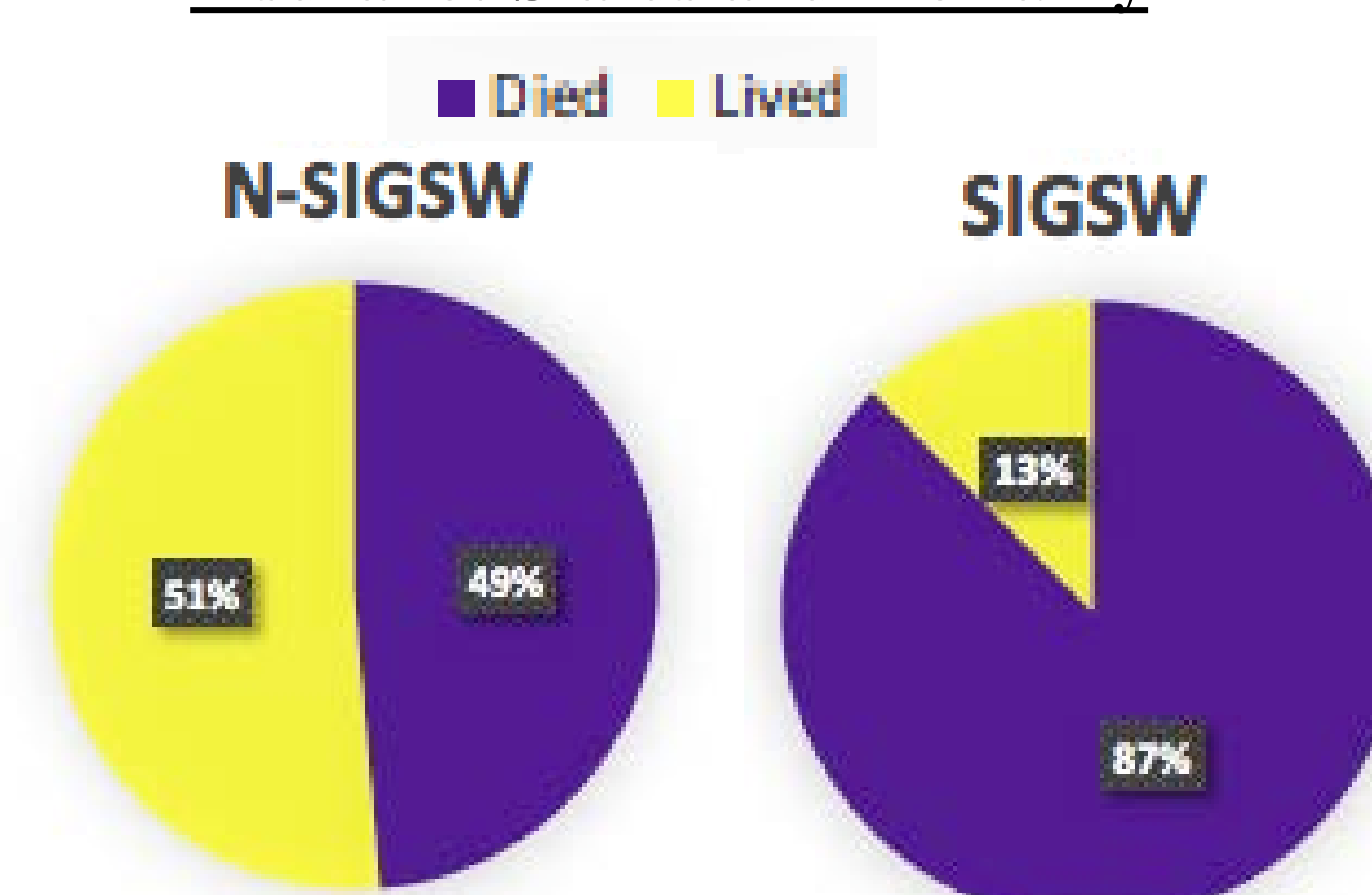


Figure 1: Uninsured Mortality

Race and Mortality

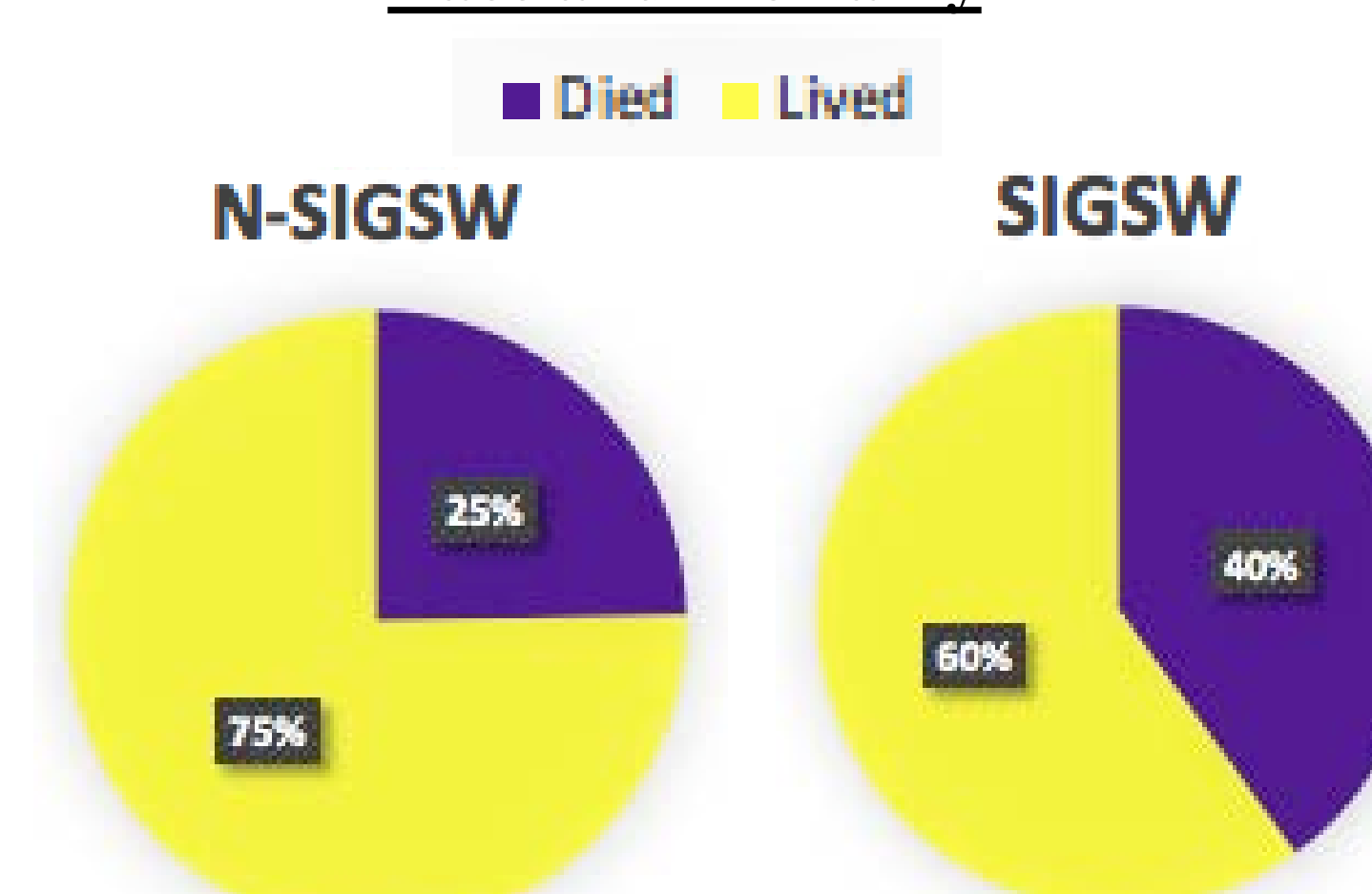


Figure 3: Black Mortality

Insurance Status and Mortality

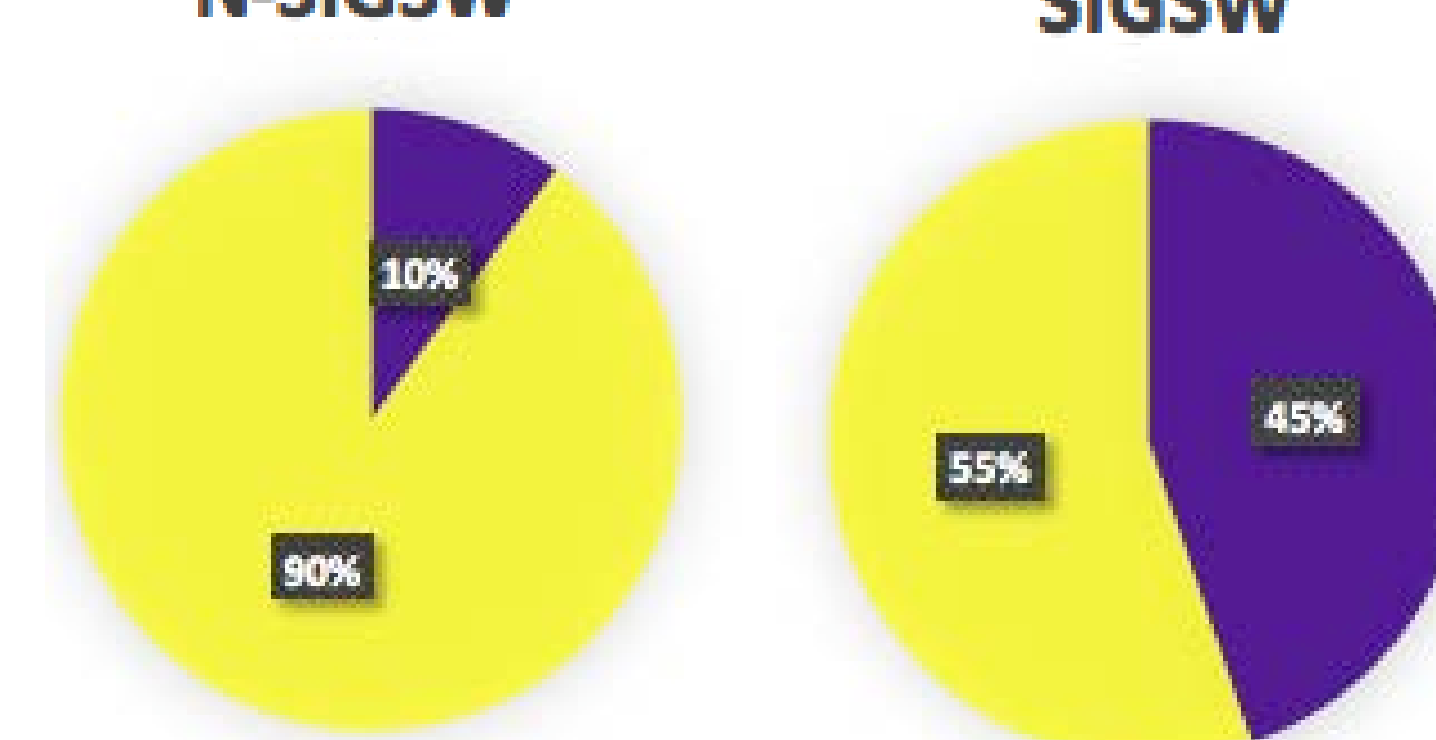


Figure 2: Insured Mortality

Race and Mortality

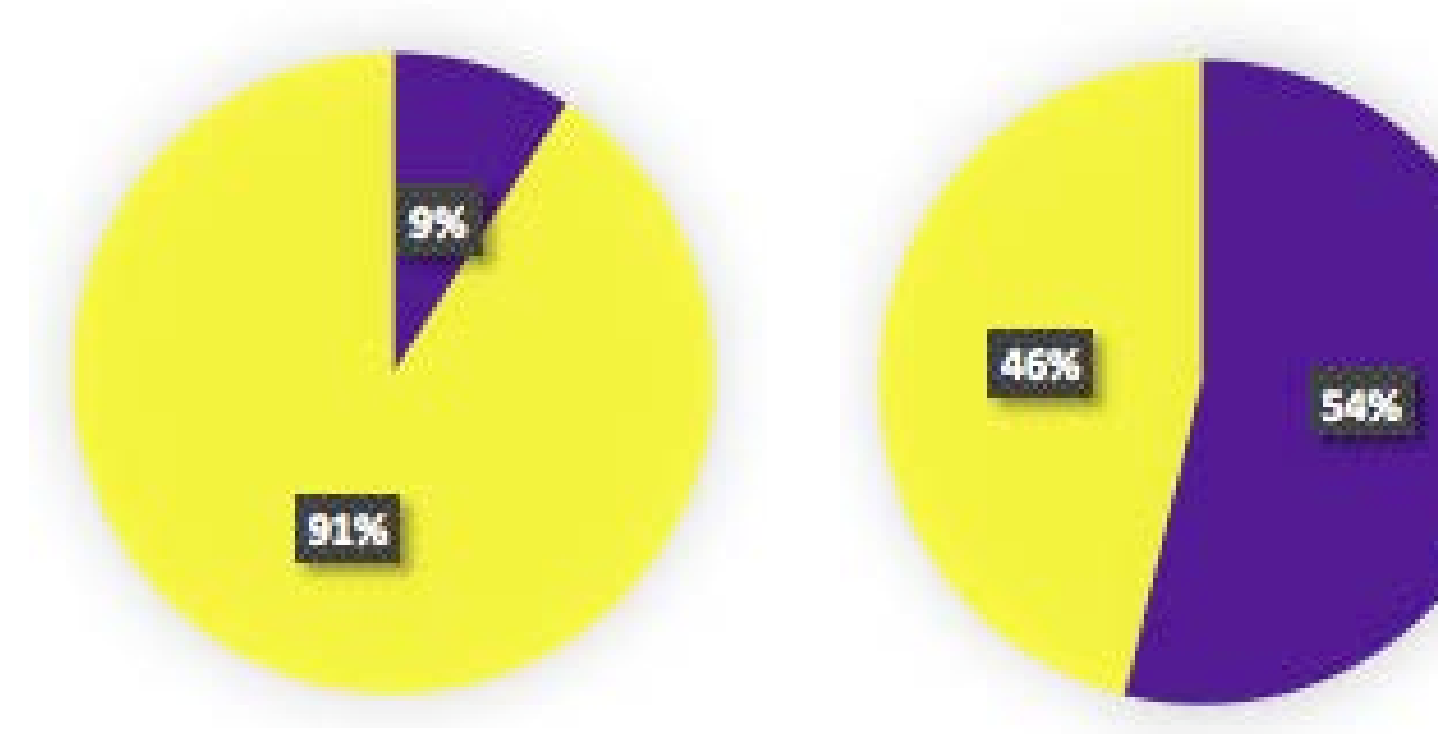


Figure 4: White Mortality

Conclusions

- From these results, insurance status, rather than race, is more closely associated with mortality outcomes.
- Uninsured SIGSW patient costs were significantly decreased more than likely due to only a 12.5% survival rate.
- Further studies will elucidate why uninsured SIGSW patients have a higher mortality rate as opposed to insured.