



College of Liberal Arts

**Center for Public Safety Initiatives**

# Years of Potential Life Lost in Rochester, NY

**Working Paper 2024- 07**

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## Introduction

Over the past three years, homicides have increased in Rochester, New York. This increase has led to more years of potential life lost among the victims of homicide. Years of life lost are calculated by subtracting the age of a victim from their life expectancy. The National Center for Health Statistics (NCHS) calculates life expectancy through the National Vital Statistics System's use of mortality tables, the most prominent table being *Provisional life expectancy, by age, Hispanic origin and race, and sex*. All data regarding homicide victims was identified by the Rochester Police Department's (RPD) Open Data Portal. The data for this project examines 2021 homicides in Rochester, New York. There were 84 homicides in 2021, but 80 victims were identified in the portal.

The RPD Open Data Portal homicide datasheet provided the necessary data to determine the years of potential life lost in 2021 by homicide victims. The portal contained relevant variables like age, race, sex, Hispanic origin, and the method of murder of the victims. Homicides were categorized as homicide by firearm, knife/cutting instrument, physical, other, and unknown. Once all variables were collected, descriptive statistics were run on every possible variable combination to determine the years of life lost among the homicide victims within the sample.

## A Brief History of Homicide in Rochester

In 2021, Rochester broke a record with 84 homicide victims, a devastatingly high total (Garzone 2021). During this year, Rochester had the highest per-capita homicide rate out of cities in New York and had a higher rate than other big U.S. cities like Chicago, Los Angeles, Washington D.C., and more (Schermerhorn 2022).

## Life Expectancy Explained

One of the most significant components of this research was the use of life expectancy. Factors such as age, sex, race, and ethnicity, can affect a person’s unique life expectancy. For this project, life expectancy was calculated using the *NCHS, National Vital Statistics System, and Mortality Table: Of Provisional life expectancy, by age, race and Hispanic origin, and Sex.*

The National Center for Health Statistics (NCHS) produces annual national natality and mortality statistics (Arias et. al 2022). The first annual report was published in 2020 to assess the effects of COVID-19 on life expectancy. The report used for this project to calculate years of life lost looked at the 2021 data on life expectancy provided by NCHS, as seen in Table 1.

*Table 1. NCHS, National Vital Statistics System, and Mortality Table of Provisional Life Expectancy, by Age, Race and Hispanic origin, and Sex: United States, 2021*

### Vital Statistics Surveillance Report

Table. Provisional life expectancy, by age, race and Hispanic origin, and sex: United States, 2021

Age (years)	All races and origins			Hispanic			Non-Hispanic American Indian or Alaska Native			Non-Hispanic Asian			Non-Hispanic Black			Non-Hispanic White		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
0.....	76.1	73.2	79.1	77.7	74.4	81.0	65.2	61.5	69.2	83.5	81.2	85.6	70.8	66.7	74.8	76.4	73.7	79.2
1.....	75.6	72.6	78.5	77.1	73.8	80.4	64.7	61.0	68.7	82.7	80.4	84.8	70.6	66.5	74.5	75.7	73.0	78.5
5.....	71.6	68.7	74.6	73.1	69.8	76.4	60.9	57.1	64.8	78.8	76.5	80.8	66.7	62.6	70.7	71.8	69.1	74.6
10.....	66.7	63.8	69.7	68.2	64.9	71.5	55.9	52.2	59.9	73.8	71.5	75.9	61.8	57.7	65.7	66.8	64.1	69.6
15.....	61.7	58.8	64.7	63.2	59.9	66.5	51.0	47.3	55.0	68.8	66.6	70.9	56.9	52.8	60.8	61.9	59.2	64.7
20.....	56.9	54.1	59.8	58.4	55.1	61.6	46.4	42.7	50.3	63.9	61.7	65.9	52.2	48.3	56.0	57.0	54.4	59.8
25.....	52.2	49.5	55.0	53.7	50.6	56.8	42.1	38.6	45.8	59.1	56.9	61.0	47.8	44.2	51.3	52.3	49.8	54.9
30.....	47.6	45.1	50.2	49.1	46.1	52.0	38.0	34.7	41.5	54.3	52.1	56.1	43.5	40.0	46.7	47.7	45.3	50.2
35.....	43.1	40.7	45.5	44.5	41.7	47.2	34.3	31.2	37.4	49.4	47.3	51.2	39.1	35.9	42.1	43.1	40.9	45.5
40.....	38.6	36.4	40.9	39.9	37.3	42.5	30.8	28.0	33.8	44.6	42.5	46.3	35.0	32.0	37.7	38.7	36.5	40.8
45.....	34.2	32.1	36.4	35.5	33.0	37.8	27.4	24.8	30.0	39.9	37.9	41.5	30.9	28.1	33.4	34.3	32.3	36.3
50.....	30.0	28.0	31.9	31.1	28.8	33.3	24.4	22.1	26.7	35.2	33.3	36.7	26.9	24.4	29.2	30.0	28.1	31.9
55.....	25.9	24.0	27.6	26.9	24.8	28.8	21.5	19.5	23.5	30.6	28.9	32.0	23.2	20.9	25.2	25.9	24.1	27.6
60.....	22.0	20.4	23.5	23.0	21.1	24.6	18.9	17.2	20.4	26.1	24.6	27.4	19.7	17.6	21.5	21.9	20.4	23.4
65.....	18.3	16.9	19.6	19.3	17.6	20.6	16.3	15.1	17.4	21.9	20.5	22.9	16.5	14.8	18.0	18.3	16.9	19.5
70.....	14.8	13.7	15.8	15.7	14.4	16.7	13.7	12.7	14.5	17.8	16.7	18.6	13.6	12.2	14.7	14.7	13.6	15.7
75.....	11.5	10.6	12.3	12.4	11.3	13.1	11.2	10.5	11.8	14.0	13.1	14.5	10.9	9.7	11.7	11.4	10.5	12.1
80.....	8.6	7.9	9.1	9.3	8.5	9.7	9.1	8.6	9.3	10.4	9.8	10.7	8.4	7.5	8.9	8.4	7.8	8.9
85.....	6.1	5.6	6.4	6.7	6.1	6.9	7.2	6.9	7.2	7.3	6.9	7.4	6.2	5.6	6.5	5.9	5.5	6.2
90.....	4.1	3.9	4.3	4.6	4.3	4.6	5.6	5.5	5.4	4.8	4.7	4.8	4.5	4.1	4.6	4.0	3.7	4.1
95.....	2.8	2.7	2.9	3.2	3.0	3.1	4.4	4.4	4.1	3.1	3.1	3.0	3.2	3.0	3.3	2.7	2.6	2.7
100.....	2.0	2.0	2.0	2.3	2.2	2.1	3.5	3.6	3.3	2.1	2.2	2.0	2.4	2.3	2.3	1.9	1.8	1.9

NOTES: Life tables by race and Hispanic origin have been adjusted for race and ethnicity misclassification on death certificates; see Technical Notes in this report. Estimates are based on provisional data for 2021. Provisional data are subject to change as additional data are received.  
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality.

Source: NVSS Vital Statistics Rapid Release

The data seen in Table 1 was calculated using period life tables based on 2021 death records. Period life tables represent hypothetical scenarios of what would happen if people experienced mortality conditions throughout their entire lives. The mortality data for this table incorporated over 99% of U.S. deaths in 2021.

Life expectancy at birth is the average number of years a group of infants would live if they experienced the same age-specific death rates throughout their lives. In 2021, the total life expectancy at birth was 76.1 years. More specifically, by sex, the life expectancy at birth for males was 73.2 years and 79.1 years for females. Table 1 considers how age, sex, race, and Hispanic origin interact and affect life expectancy at birth.

The group with the highest life expectancy in 2021 was Asians, with a total life expectancy of 83.5 years. Next, those who identified as Hispanic had a life expectancy of 77.7 years. Following, the White population had a life expectancy of 76.4 years, Black people had a life expectancy of 70.8 years, and lastly, American Indian/Alaskan Natives had a life expectancy of 65.2 years. Through this data, it is clear that some groups are more likely to live longer than others, and their race/ethnicity seems to be a correlating factor.

There are many reasons why groups may experience a decline in life expectancy. Some of the most common factors are an increase in mortality rates due to COVID-19, injury, heart disease, influenza, and more. However, for this research, it is important to note that some groups experienced increases in mortality rates because of homicide. For example, between 2020 and 2021, men experienced a 2.5% increase in mortality rates due to homicide, which decreased their life expectancy. The Hispanic population suffered from the fourth-largest decline in life expectancy between 2020 and 2021. This

decline was partly due to a 4.8% increase in their mortality due to homicide.

The life expectancy from Table 1 was used to calculate the years of life lost in Rochester, New York.

The data collected from the Rochester Police Department’s Open Data Portal regarding years of life lost are shown in Table 2.

## Analysis

*Table 2. Years of Life Lost Statistics 2021*

<b>Years of Life Lost in Rochester, NY: 2021</b>	
Mean	41.365
Standard Error	1.3781
Median	42.10
Mode	44.20
Standard Deviation	12.3265
Sample Variance	151.9419
Kurtosis	1.5634
Skewness	-0.3329
Range	77.30
Minimum	3.70
Maximum	81
Sum	3309.20
Count	80

*Source: Rochester Police Department Open Data Portal*

In 2021, homicide victims in Rochester lost an average of 41.37 years of life per victim (RPD Open Data Portal). The most common number of years of life lost per victim was 44.2 years, which is almost half a century of potential life lost. The years of life lost among victims had a range of 77.3 years, from 3.7 to 81 years. The youngest homicide victim of 2021 was a three-month-old infant whose age was identified as ‘0’ years old by RPD. Due to her extremely young age, along with factors such as her sex, race, and ethnicity, this victim lost a total of 81 potential years of life when she died. The oldest homicide victim identified by RPD was an 89-year-old man, and due to his old age, he only lost 3.7 years of potential life. Although there was variation across groups, the cumulative number of years of life lost is horrifying. In 2021, Rochester homicide victims lost a total of 3309.2 years of potential life. Further analysis shows the differences in the data between male and female victims, and these statistics are shown in Table 3.

*Table 3. Years of Life Lost 2021: Male vs. Female*

	<b>Male</b>	<b>Female</b>
Mean	40.26	46.57
Median	42.10	45.55
Mode	44.20	56
Range	58.90	70.50
Minimum	3.70	10.50
Maximum	62.60	81
Sum	2657.25	651.95
Count	66	14

*Source: New York State Division of Criminal Justice Services*

There is a contrast between race, sex, and Hispanic origin when looking at the number of years of life lost. As shown in Table 3, the average number of years of life lost among female homicide victims was 46.57 years. Of all female victims (n=14), there were 651.95 years of life lost in 2021. The average number of years of life lost for male homicide victims was lower than that of females at 40.26 (n=66). However, collectively, the total years of lost life for all male homicide victims was higher than that of females at 2657.25 years.

Similar to the breakdown of gender, the analysis of race and ethnicity regarding the years of life lost in 2021 can shed light on the racial disparities among homicides in Rochester. Data regarding race and ethnicity collected from the RPD Open Data Portal can be seen in Table 4.

*Table 4. Years of Life Lost 2021: Racial Demographics*

	<b>Non-Hispanic White</b>	<b>Non-Hispanic Black</b>	<b>Hispanic White</b>	<b>Hispanic Black</b>
Mean	27.67	41.2	50.62	59.2
Median	24.18	42.1	50.6	59.2
Mode	22.25	42.1	N/A	59.2
Range	51.2	49.1	48	0
Minimum	3.7	13.5	33	59.2
Maximum	54.9	62.6	81	59.2
Sum	221.35	2471.85	556.8	59.2
Count	8	60	11	1

*Source: Rochester Police Department Open Data Portal*

In 2021, the most common group victimized by homicide was Black males, specifically non-Hispanic Black males. Out of the years of life lost in 2021, non-Hispanic Black males made up 74.7% of the homicide victims, with 51 deaths, and the average age at death being 29.9 years old (RPD Open Data Portal). Seventeen of those victims, 33.3% of the total number of non-Hispanic Black men killed, and

21.25% of all homicide victims in 2021, were 24 years old or younger when killed. According to the Centers for Disease Control and Prevention (CDC), homicide is the leading cause of death for Black men between the ages of 10 and 24, especially in urban settings (Sered 2014). Data from the Bureau of Justice Statistics and the U.S. Department of Justice collected from 1996-2007 showed that young Black men were more likely to be victimized by violence, including homicide.

Although this paper discusses 2021 homicides in Rochester, it is beneficial to examine the statistics surrounding 2021 non-fatal shootings in the city. In 2021, there were 419 shooting victims, with 87.4% of the victims being Black and 82.6% being male (RPD Open Data Portal). Although these incidents did not result in death, these statistics indicate that the disproportionate victimization of Black men is not limited to homicide.

There are many reasons why young Black men face higher rates of victimization. Some of the possible causes include poverty, mental illness, homelessness, and more (Sered 2014). Because of institutional obstacles, Black communities are more vulnerable to such social issues. (Ervin et. al 2020). For example, Black children are three times as likely than white children to live in poverty, and less likely to have a parent with a bachelor's degree or higher (Sered 2014). Black Americans experience mental illness at similar rates as other races, but they are less likely to receive adequate care to address such issues. They are more likely to struggle with poverty, unemployment, and housing; and these factors may push them to be caught in the crossfire of street life. Many of these experiences faced by the Black community in urban environments derive from systemic barriers passed down through generations following slavery (Lee, 2023). The effects of slavery are reflected today within our society's treatment of Black people, and the trauma ingrained in the Black community affects the way they face social issues today. All of these institutional risk factors contribute to why Black people,



specifically young Black men, are more prone to victimization than other race groups.

Aside from the disproportionate representation of Black men within RPD's homicide victim data, another factor that stands out is the high number of firearm-related homicides in 2021. Gun violence is a prominent issue in America, and the streets of Rochester are not an exception. In 2021, a firearm was used in 57 out of 80 homicides, which equates to 71.25% of the homicides (RPD Open Data Portal). Homicides committed with a firearm took a total of 2412.35 years of life from Rochester, which is 72.9% of the total years of life lost in 2021. To compare: 11.5% of Rochester's years of life lost in 2021 was due to an "other" form of violence, 9.5% due to a knife/cutting instrument, 5.23% due to physical violence, and 0.85% was due to an unknown form of violence.

## Conclusion

The goal of this research is to conceptualize homicide in Rochester in an unconventional way with a large number that captures the city's loss. The years of life lost among Rochester homicide victims should be a call to action. Rochester lost 3309.2 potential years of life in just one year from only 80 individuals. There was a particularly higher number of males killed in 2021 compared to females. The majority of those men were Black, which points to an issue regarding the victimization of Black men in Rochester, New York. Additionally, over 70% of the homicides were committed using a firearm, and a clear indicator of the scope of the gun violence problem in Rochester. As the homicides increase, so will the number of years of life lost in the community. Recognizing the number of individuals killed is not enough. The years stolen from these victims need to be highlighted for the community, so people will better understand the true impact of homicides in Rochester, New York.

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