

# Measuring & Mapping Mortality in the Elm City: Identifying and Addressing Health Inequities in New Haven with Years of Potential Life Lost (YPLL) and Other Health Determinants

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## Background

Population health in the City of New Haven, including health care access, health outcomes, and mortality, is influenced by socioeconomic disparities. These disparities exist on both the individual and neighborhood scale, and across demographics such as age, sex, race, and ethnicity. Continued analyses to understand these disparities is imperative to elucidate public health concerns and to design and to implement appropriate initiatives and interventions.

## Objectives

- To measure the leading causes of death, average life expectancy, and premature death in New Haven using mortality data and stratifying by key variables including age, sex, race, and ethnicity.
- To characterize the relationships between mortality, geographic location, and other demographic variables.

## Methods

1. Data Cleaning: Raw data cleaned in R and Excel. Primary cause of death ICD-10 codes categorized via the CDC/NCHS's "113 Selected Causes of Death."
2. ICD-10 Analysis: Data analyzed separately for 2007-2016, 2008-2012, and 2012-2016. Primary cause of death stratified by age, sex, race, and ethnicity.
3. Premature Death: YPLL calculated for each cause of death using the frequency method and 70 and 75 years old as age endpoints.
4. Geospatial Mapping: Proportions of death from the six leading causes of death mapped at the neighborhood level.

## Key Findings

- Deaths from heart disease, diabetes, and accidents increased between the five-year aggregate time intervals used (2008-2012 and 2012-2016).
- Deaths due to chronic illnesses increased among older age groups, whereas deaths due to assault, suicide, and accidents increased among younger age groups.
- Further research and analysis needed to address racial and ethnic disparities for both infant and HIV-associated mortality.
- Leading causes of death varied across neighborhoods.

## Recommendations

Considerations for resource allocation and program planning suggested by the geographic analyses and neighborhood level variations in disease burden and premature death.

## Limitations

This project is limited by previously available data at the New Haven Health Department. This data may be incomplete and relies on the accuracy of coroner reports, timeliness of reporting, etc. The analyses are limited by the variables collected in the data and low annual numbers of cases for certain causes of death.

## Results

Five Leading Causes of Death: New Haven, CT (2007-2016)					
Rank	Cause of Death (% of Overall)	Proportion of Deaths Male	Proportion of Deaths Female	YPLL Male	YPLL Female
1	Malignant Neoplasms (22.96%)	50.9%	49.1%	8,113	7,145
2	Diseases of the Heart (20.39%)	50.3%	49.7%	7,565	3,880
3	Accidents (6.11%)	66.7%	33.3%	9,013	3,490
4	Cerebrovascular Disease (3.68%)	41.4%	58.6%	822.5	647.5
5	Diabetes Mellitus (3.62%)	48.8%	51.2%	1,468	860

Table 1: An abbreviated table of the five leading causes of death in New Haven from 2007-2016, showing the proportion and years of potential life lost (YPLL) stratified by sex using 75 years old as the endpoint.

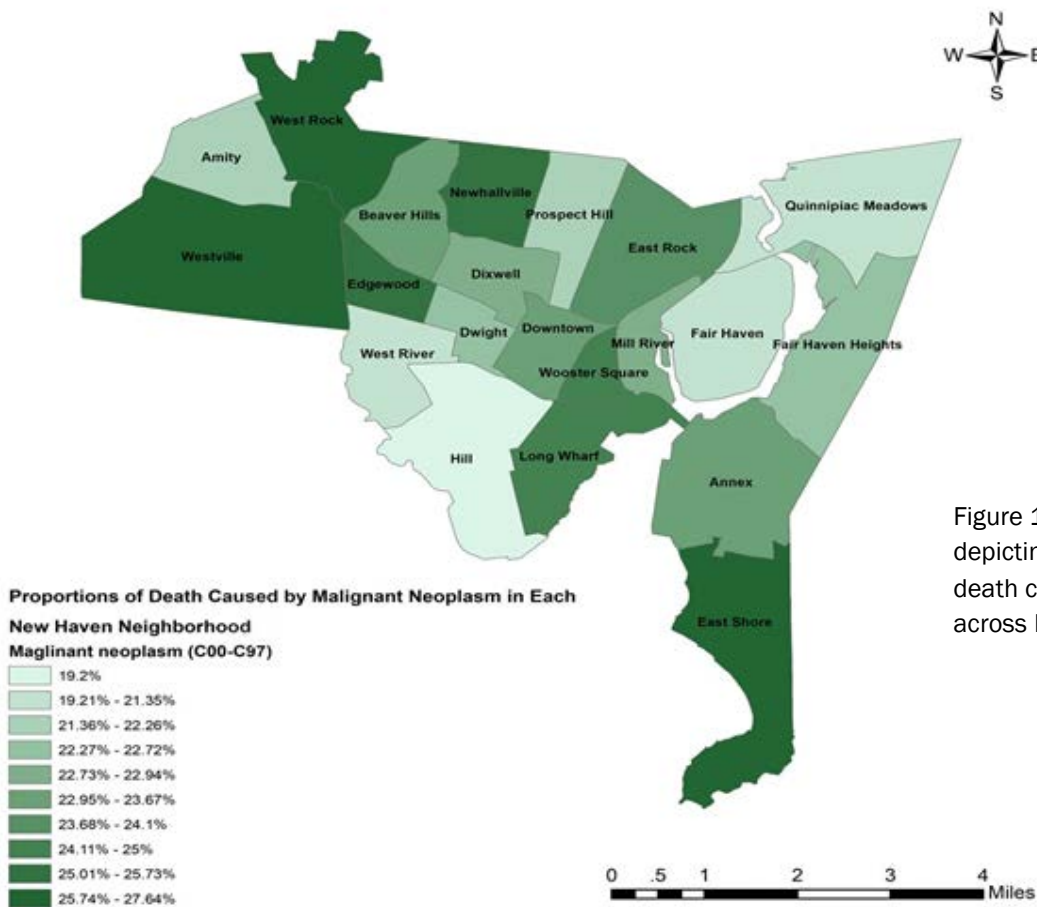


Figure 1: Sample map (one of many) depicting the variation in proportions of death caused by malignant neoplasms across New Haven neighborhoods.

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