Trends and Disparities in Mortality in Eastern North Carolina

Total Deaths, Premature Mortality and Deaths for Ten Leading Causes; 1990-2020

A Resource for Healthy Communities
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1. Introduction

Health Indicators Series:
A Resource for Healthy Communities
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Health Indicators is a series of reports describing community health at the state, regional, and county level. These reports are intended to provide state policy makers, local health departments, hospitals, and community-based health planning groups with a wide range of information useful for diagnosing the health of Eastern North Carolina’s population and its local communities, evaluating the effectiveness of existing services, and envisioning and planning new interventions. The reports in this periodically published series can be used in conjunction with the County Health Data Book, State Center for Health Statistics, as part of the Community Health Assessment Process. Individual reports in ECU’s Health Indicator Series are custom made for the counties of North Carolina. Reports in this series will describe trends in mortality, including premature mortality for all causes of death, mortality (crude) and age-adjusted mortality for leading causes of death, and measures of race disparities or inequalities in mortality rate.

Report Series #2 of the series focuses attention on two overarching goals—to increase the span and quality of life, and to eliminate health disparities. Using rate comparisons, this report describes the inequalities in mortality among Eastern North Carolina and other regions, and among four demographic groups. Premature mortality, the focus of Report Series #1, is included in the death from all causes section located at the beginning of this report. The measure used to quantify premature mortality is described in more detail in the Methods and Interpretations section.

This report describes the leading contributors to mortality, provides a geographic context, and examines trends and inequalities over a 31-year period (1990-2020), as well as the most recent 16 year period (2005 to 2020). The report begins with data highlights, provided as an introduction to the data, rather than a summary of it. Readers are encouraged to draw their own conclusions from the data and pose new questions suggested by what they see. The following section presents both the overall and five leading contributors to mortality for the state by race and gender. In this section, pie charts describe the relative contribution of each of five leading contributors to the overall, general rate. These charts also make regional and demographic comparisons. The next section charts recent trends and disparities in mortality and provides projections to the year 2030. These charts place Eastern North Carolina’s health status in a historical context and provide a glimpse into the future.
The region *Eastern North Carolina* is comprised of 41 counties located in the extreme east of North Carolina and approximates the coastal plain physiographic province of the state. It includes all counties east of I-95. This region is characterized by its rurality, poverty, and some of the highest mortality rates in the nation. The name of the region is abbreviated as ENC41 or ENC. The rest of North Carolina is the remaining 59 counties; abbreviated as RNC59 or RNC.
2. Data Highlights

Trends and Disparities in Mortality in Eastern North Carolina

The following highlights of mortality in the 41 counties of Eastern North Carolina (ENC41) describe current status and trends in the causes of death from major diseases and how they vary across different population groups. The graphs, charts, and tables paint a picture of the region’s health with a broad brush. The study of mortality in populations should include consideration of time and geographic space as well as underlying demographic, political-economic, and socio-cultural conditions. Readers are encouraged to think of these factors as they consider the data presented in this report, formulate their own questions about the causes of mortality, and think about strategies to reduce mortality in the population described.

Current Disparities in Mortality by Geography, Race, and Gender

In 2020, the age-adjusted mortality rate for Eastern North Carolina is 932 deaths per 100,000. This rate is 9% higher than the state rate. Within Eastern North Carolina, the non-White rate is 29% higher than the White rate. The non-White male rate is 36% higher than the rate for White males. The non-White female rate is 25% higher than the rate for White females.

All cause mortality and premature mortality both increased in 2020 due to the impact of COVID-19. The marked increase is evident in Figures 5.1 i-v and 5.2 i-v. In 2020 COVID-19 was directly responsible for 2454 deaths in ENC41, but may have also indirectly led to increased mortality from other causes such as heart disease and cerebrovascular disease due to delayed care because of the pandemic. Because COVID-19 is a new cause of death with no trend data available this report does not include charts for it. For a look at the 2020 impact of COVID-19 in eastern North Carolina readers may refer to the report, COVID-19 in Eastern North Carolina, which is available on this web page.

The five general leading causes of mortality in Eastern North Carolina (2020) are:
1. Disease of Heart
2. Cancer - All Sites
3. COVID-19
4. All Other Unintentional Injuries
5. Cerebrovascular Disease

The five general leading causes of mortality in Eastern North Carolina by race and gender (2020) are:

<table>
<thead>
<tr>
<th>Race and Gender</th>
<th>non-White Males</th>
<th>White Males</th>
<th>non-White Females</th>
<th>White Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Diseases of Heart</td>
<td>Diseases of Heart</td>
<td>Diseases of Heart</td>
<td>Cancer - All Sites</td>
</tr>
<tr>
<td>2nd</td>
<td>Cancer - All Sites</td>
<td>Cancer - All Sites</td>
<td>Cancer - All Sites</td>
<td>Heart Disease</td>
</tr>
<tr>
<td>3rd</td>
<td>COVID-19</td>
<td>All Other Unintentional Injuries and Adverse Effects</td>
<td>COVID-19</td>
<td>Alzheimer’s Disease</td>
</tr>
<tr>
<td>4th</td>
<td>All Other Unintentional Injuries and Adverse Effects</td>
<td>COVID-19</td>
<td>Cerebrovascular Disease</td>
<td>Chronic Lower Respiratory Diseases</td>
</tr>
<tr>
<td>5th</td>
<td>Diabetes Mellitus</td>
<td>Chronic Lower Respiratory Diseases</td>
<td>Alzheimer’s Disease</td>
<td>Cerebrovascular Disease</td>
</tr>
</tbody>
</table>
Trends in Mortality from All Causes

- ENC’s all-cause mortality rate trend is increasing, and the yearly rate showed a large jump in 2020. The trend is 11% greater than RNC and 8% greater than NC. The ENC rate trend has increased 23% over the 16-year period.
- The age-adjusted all-cause mortality rate for ENC had been declining prior to 2020. The rate trend declined 7% over the 16-year period. ENC’s trend is 7% greater than NC and 9% greater than RNC.
- The rate trend is highest for non-White males, followed by White males, non-White females and White females.
- The 16-year rate trends for all cause mortality for both non-Whites and Whites are declining. Yearly rates for 2020 increased. The non-White trend is 17% greater than the White trend.
- Racial disparity increased in 2020, but the 16-year rate trend is flat and unreliable.

Trends in Premature Mortality from All Causes of Death

- ENC’s premature mortality rate trend increased in 2020, and shows a 7% increase over the 16-year period. ENC is 17% greater than NC and 24% greater than RNC. The trends for NC and RNC are not reliable.
- The ENC’s age-adjusted premature mortality rate increased in 2020. However, the rate trends for ENC, NC, and RNC and the US are all unreliable.
- Premature mortality rate trends for all demographic groups increased in 2020. The trends for non-White males, White males, and non-White females are unreliable. The trend for White females increased 7% over the 16-year period.
- The non-White rate is 49% greater than the White rate, but the trends are not reliable.
- The racial disparity trend is not reliable.

Diseases of the Heart

- ENC’s heart disease rate trend is flat over the 16-year period, although the trend is not reliable. The data line for recent years has ticked up. The rate trend for NC has declined 5% and for RNC has declined 7% over the period.
- ENC’s age-adjusted heart disease rate is 13% greater than NC and 7% greater than the US rate. All three rates have decreased at a similar pace over the recent 16-year period.
- The rate for non-White males is the highest and has decreased 21% over the 16-year period, compared to 26% for the White male rate. The non-White male rate has ticked up in recent years. The non-White female rate is decreasing the most and is set to converge with the White female rate.
- The non-White rate is 14% higher than the White rate in 2020 and ticked up this year. The 16-year trend for both is decreasing.
- The trend for racial disparity is not reliable.

All Other Unintentional Injuries and Adverse Effects

- Mortality from unintentional injuries and adverse effects is increasing in ENC (149% increase over 16 years). The trends for RNC and NC are also increasing, but the ENC rate is increasing faster.
- The age-adjusted mortality rate trend for ENC, RNC, NC and the US are all increasing. ENC’s rate trend increased the most, 134% over the 16-year period.
- The 16-year trends for White males, non-White males, and White females are all increasing significantly (145%, 121%, and 115% respectively). The rate for non-White females is increasing, but not as much.
Trends and Disparities in Mortality in Eastern North Carolina-41 Counties

- The White rate has increased 135% over the 16-year period. The non-White rate has increased 129%.
- The trend for racial disparity is not reliable.

Cerebrovascular Disease
- ENC’s cerebrovascular disease mortality rate trend shows a 16% increase over the recent 16-year period. It is 18% greater than the RNC rate and 13% greater than the NC rate.
- The age-adjusted rate has decreased 15% over the 16-year period. It is 17% greater than the RNC rate and 27% greater than the US rate.
- The non-White rate in 2020 is 32% greater than the White rate but is decreasing more rapidly (23% over the 16-year period). Both rates are projected to converge in the future.
- There is a 37% decrease in racial disparity between Whites and non-Whites over the 16-year period.

Cancer—Trachea, Bronchus, Lung
- The cancer—TBL rate trend for ENC has decreased 13% over the recent 16-year period. The ENC rate is 21% greater than the RNC rate. The RNC rate has decreased 24%.
- In 2020 the age-adjusted rate for ENC was 17% above the RNC rate. The ENC rate decreased 37% over the 16-year period, while the RNC rate decreased 42%.
- In 2020 the non-White male rate was the highest but is only 5% higher than the White male rate, is decreasing, and will likely converge soon. The mortality rate for White females is 38% higher than the rate for non-White females and decreased 30% over the period. The rate for non-White females decreased 20%.
- The non-White mortality rate is 12% less than the White rate. Both are decreasing over the 16-year period at about the same pace.
- The 16-year rate trend for racial disparity is unreliable.

Chronic Lower Respiratory Diseases
- The ENC rate trend for CLRD in 2020 is increasing faster than RNC or NC—27% over the 16-year period compared to 9% for RNC and 14% for NC.
- The age-adjusted rate for 2020 for ENC, RNC and NC are virtually equal. The US rate is 7% lower than ENC. The rate trend for ENC is decreasing.
- The age-adjusted rate for White males is the highest. The rates for White males and non-White males are decreasing. The rate for non-White females is lower but shows a 39% increase. The rate for White females is unreliable.
- The White rate has decreased 13% over the 16-year period. The non-White rate is 36% less than the White rate but the trend is unreliable.
- The racial disparity trend has seen a 37% increase over the 16-year period.

Alzheimer’s Disease
- The Alzheimer’s mortality rate for ENC shows a 218% increase over the recent 16-year period. ENC’s rate is 12% less than RNC and 9% less than NC but ENC’s rate of increase was larger than both RNC and NC.
- Over the 16-year period the age-adjusted rate for ENC has increased by 108%. The ENC rate is 12% less than the RNC rate and 9% less than NC. ENC has the highest rate increase.
The mortality rates for females, both White and non-White, are greater than for males. Non-White females have the highest rate of increase (166% over 16 years).

The non-White mortality rate for Alzheimer’s has increased 162% over the 16-year period. In 2020 the non-White rate is 9% greater than the White rate.

The racial disparity between non-White to White has increased 175% over the 16-year period.

**Diabetes Mellitus**

- ENC’s diabetes mortality rate is 35% greater than RNC in 2020. The rate for ENC increased 35% over the 16-year period.
- ENC’s age-adjusted rate is flat over the 16-year period but the trend is unreliable. The trends for RNC and NC are also unreliable.
- The rate for non-White males is the highest and is increasing (20% increase over the 16-year period). The White male rate has increased 16%. The non-White female rate has decreased 30% and the White female rate has decreased 9%.
- The non-White mortality rate decreased 11% over the 16 year period but remains 112% greater than the White rate. The White rate is unreliable.
- The trend for racial disparity shows a 24% decrease in racial disparity over the 16-year period.

**Nephritis, Nephrotic Syndrome, and Nephrosis**

- The ENC mortality rate trend for nephritis, nephrotic syndrome, and nephrosis is unreliable. The trend for RNC59 has increased 10% over the 16-year period and the NC trend has increased 7%.
- The age-adjusted ENC rate is about equal to the NC rate but the 16-year rate trend for ENC has decreased more than NC and is set to drop below NC.
- The 16-year trends for non-White males and females are higher than those for White males and females. Non-White females show the greatest decrease, 36% over 16 years. White females have the lowest rates.
- In 2020 the non-White rate was 124% greater than the White rate and has the same decrease rate (28%) as the White rate over the 16-year period.
- The racial disparity trend is unreliable over the 16-year period.

**Unintentional Motor Vehicle Injuries**

- ENC’s unintentional motor vehicle injury mortality rate trend is decreasing but is still 44% greater than RNC in 2020.
- The ENC age-adjusted rate is 47% greater than RNC and 63% greater than the US. The 16-year rate trends for ENC, RNC, and NC are all decreasing, although the ENC numbers have ticked up in the last 2 years.
- The rate for non-White males is not reliable. The non-White female trend is increasing, and the trends for White males and White females are declining.
- The White rate trend has decreased 40% over the 16-year period. The non-White rate has increased 21% over 16 years and is 71% greater than the White rate in 2020.
- Racial disparity has increased significantly over the 16-year period.
Pneumonia and Influenza
- The mortality rate trend for pneumonia and influenza for ENC has increased 13% over the 16-year period. The trend for RNC has decreased by 11% and the NC trend is unreliable.
- The age-adjusted rate trends for all NC regions are similar and are decreasing. The ENC rate is 19% greater than the US rate.
- The age-adjusted rate trends for White males and White females are decreasing. The trends for non-White males and non-White females are unreliable.
- The White rate trend has decreased 22% over the 16-year period. The non-White rate is unreliable.
- Racial disparity has increased 163% over the 16-year period.

Cancer - All Sites
- The cancer - all sites mortality rate trend for ENC is greater than NC and has seen a 3% increase over the last 16 years. RNC has decreased by 2% and the trend for NC is unreliable.
- The age-adjusted cancer - all sites mortality rate trends for ENC, RNC, NC and the US are all decreasing at about the same pace. The ENC rate trend is 9% greater than RNC and 10% greater than the US.
- The rate for non-White males has decreased 35% over 16 years and the White male rate has decreased 25%. The non-White female and White female rates are about the same.
- Both White and non-White cancer – all sites mortality rates are decreasing over the 16-year period, although non-White rates are 9% greater than Whites.
- The 16-year trend for racial disparity shows a 44% decrease.

HIV Disease
- The HIV mortality rate for ENC has decreased 76% over the past 16 years but was still 29% higher than RNC in 2020.
- The 16-year age-adjusted rate trend for ENC has been decreasing, but was still 35% greater than RNC and 32% greater than US.
- Non-White males continue to have the highest rate of age-adjusted mortality, but this rate has decreased 82% in a 16-year reliable trend. The rate for White males also decreased 82% and non-White females decreased 80%. A convergence of the non-White and White rate is expected in the future.
- The 16-year non-White age-adjusted HIV mortality rate has decreased by 82% but was 618% greater than White in 2020. The White rate has decreased by 74%. The two rates are projected to converge in the future.
- The racial disparity 16-year trend is not reliable.
3. Methods, Interpretation, and References

Data Sources
The data for mortality and premature mortality in Eastern North Carolina were obtained from death certificate data from the North Carolina State Center for Health Statistics and population data from the National Center for Health Statistics bridged-race population estimates. For the US, data were obtained from the CDC Multiple Cause of Death public use data file.

Measures
Two types of mortality measures are covered in this report. The first, called mortality rate, is a rate based on the number of deaths per population (or, deaths normalized by the population that produced them) for a given unit area, such as the county, region, or state over a specified time interval. The mortality rate is expressed in two ways, the basic true (actual or observed) rate, and an age-adjusted rate (see below). Mortality rates are used to evaluate the impact and burden of mortality on a population and to make comparisons, where appropriate, among populations. Like the mortality rate, the second type, called premature mortality rate, is also a density measure, but instead of deaths, it is the number of person-years lost in a population before a specified age. In this report mortality rates are emphasized with premature mortality (YLL-75) shown only for the total number of deaths from all causes (general mortality). Premature mortality in detail is the focus of Report Series #1.

A simple count of deaths occurring in an area for a given time interval is useful for identifying potential problems or issues of public concern—particularly if the deaths result from a rare cause or they are believed to be an emerging problem for at-risk socio-demographic groups. In this sense, count data are used for sentinel surveillance. Because counts reveal nothing about the underlying population base from which deaths arise, the analytical or practical utility of count data is limited. The size of the underlying population will have an expected effect on the numbers of deaths that occur. Deaths measured in relation to a population, are an expression of density. When measured over a given interval of time (usually 1 to 5 years), the density is called a rate. (The rate is typically multiplied by 100,000 for ease in interpreting the usually small resultant value.) The mortality rate is an improvement over simple count data because it accounts for the relative size and effect of the underlying population. The chief advantage of the mortality rate is that it is useful for focusing attention on the burden of public health problems more rigorously than simple counts. However, the mortality rate is also affected by the age structure of the population, which can confound interpretation when making comparisons of rates among different areas.

Because aging is the greatest risk factor for death, the age structure of a population will have a substantial effect on the mortality rate. For example, two counties may have similar population sizes but one has a larger number of people over the age of 45 than the other. It is more likely that the older population will generate more deaths over an interval of time and this will be reflected in a higher mortality rate. Differing age structures among populations will confound any comparisons of mortality rates among those populations. Therefore, a method for controlling the effects of age structure on the mortality rate is required if any meaningful comparisons are to be made.

Age-adjustment to control for a population’s age structure requires an external reference or standard to weight the comparison populations by age groups. Currently, the US 2000 Standard Million Population (SMP) is used as the external reference. The US 2000 SMP is divided into a number of age groups whose sizes or proportions serve as weights to be applied to the corresponding age groups of the study population. This proportional redistribution generates new numbers of expected deaths in each of the corresponding age groups of the study population. These expected deaths are the number of deaths we would expect if the study population had the same age structure as the US 2000 SMP. The expected number of deaths are summed and normalized by the total population yielding an age-adjusted death rate. Once the effects of age structure are controlled, the way is paved for making comparisons among populations (Buescher, 1998).
The second measure, premature mortality, focuses on the burden of disease and death expressed in terms of accumulated person years lost before a benchmark age. We use 75 years of age as a benchmark because it approximates current life expectancy at birth in the United States and gives weight to deaths from chronic disease occurring in later life. It considers only deaths of people who die before age 75. To calculate the number of years lost, the mid-point age of the age group to which each decedent belongs is subtracted from 75 and the differences (the lost years) are summed. After all lost years are summed; the result is normalized by the population under age 75 and multiplied by 10,000. Premature mortality is expressed as a rate measured over a time interval, and it can also be age-adjusted.

Age-adjusted rates for both mortality and premature mortality have little intrinsic meaning, however, and can mask the burden and trends of mortality (or health event) that may be of local importance. A casual inspection of adjusted rates may divert attention from the actual health problems of a population and inappropriately guide interventions or resource allocation. Thus, it is important to consider the actual number of deaths (count data) in conjunction with the basic non-adjusted mortality rate first, and then use the adjusted rate only if one wishes to factor out age in understanding the pattern of mortality among populations and regions. For regions with larger populations the statistics presented here are for the year 2020. Smaller areas like counties will usually be aggregated into 5-year intervals (e.g., 2016 to 2020). A five-year interval is used because it provides a useful summary of the mortality experience while minimizing wide year-to-year fluctuations in the rate due to the effect of small numbers.

Interpreting the Pie Charts
Pie charts are provided as a visual representation of the burden of mortality. They depict the proportion of mortality accounted for by each of the leading contributors. (The leading causes of death are found in the table preceding the pie chart section.) The pie charts compare the relative levels of burden and proportions by region and demographic groups. Each regional and demographic set of pie charts is based on the observed mortality rate and the age-adjusted (expected) mortality rate.

The first two pie chart figures compare the proportions of leading causes of death across regions at the national, state, and regional/county level. The first figure in this set compares absolute mortality (the burden) using mortality rates, which sheds light on any differences in the burden of mortality by disease intrinsic to each region. The second figure, which is age-adjusted, allows for direct comparisons among regions. The same pattern is repeated in the following figures that show differences among demographic groups.

While comparing the pie charts, the reader should remember that the slices of the pie show differences in how much of the mortality rate (including age-adjusted) is accounted for by a specific cause. Finally, the reader will see that some pies are composed of different leading causes of mortality, so they have different colored slices. The variable sizes of pie slices demonstrate differences in the mortality patterns across populations and are of significant importance in studying inequalities and disparities in population health.

Interpreting the Trend Figures
Four types of figures are used to show trends in mortality, for all causes combined, and for each of the ten leading causes in the region/county over a 31-year period. Premature mortality is described for deaths by all causes only. The first of the four types of figures depicts the observed mortality rates for the region/county and state. The second figure type shows age-adjusted mortality rates for the region/county, state, and nation allowing comparisons among geographical areas. The third figure type compares trends in age-adjusted mortality rates by race and gender. Adjustment is made for age structure differences among demographic groups, which permits observation on the effects of race and gender on these groups. The last figure type depicts racial differences (or disparities) expressed as a ratio (in percent) of age-adjusted mortality for non-Whites to the age-adjusted rates for Whites over the 31 year time series. Trend lines provide historical depth to mortality processes and a basis for prediction, future comparisons, and action.
The trend line concept is borrowed from statistical modeling. However, unlike true modeling, we are not assuming the statistical independence of each sequential observation (the rate at time interval \( x \)). Instead, our assumption is that each observation is dependent to some degree on previous observations, forming a trend. If the degree of dependence is high, then the observations (rates) should lie close to the trend line. If observations appear to bounce around the fitted line in a random fashion (indicating high variability), then there is less dependence and less of a trend in the observations. We use trend lines to uncover any general patterns found in the data for the purpose of assisting the investigator in understanding the underlying processes which generate them.

The equation of the line is derived from a set of observation points. This line is an estimate of where each observed rate would be if the previous observation could predict with 100% accuracy the value of the next observation. In nature, this situation seldom arises and the degree to which individual observations deviate from this linear trend line is an indication of how well they "fit" or conform to the trend. The linear trend lines in the time series figures project expected rates to the year 2030 from known historical values (2005 to 2020) to provide a general idea about where mortality trends are heading.

The equation of the line allows the user to calculate an expected or fitted rate for any given year, \( x \). For example, in figure 6.3 ii the year 2013 is the 9th year in the series, so \( 9 \) would be substituted for \( x \) in the equation of the line derived from ENC41’s age-adjusted mortality rate series for a selected cause of death. For cerebrovascular disease (2005 to 2020), the 2013 expected or fitted age-adjusted rate is calculated to be 48.41 deaths per 100,000 people. The observed age-adjusted rate for 2013 is 45 deaths per 100,000 people. (The observed rates are the values found in the table that runs along the x-axis of the time series chart.) The numeric difference between the expected and observed rates for 2013 is 3.41—the model (the equation of the line) overestimates the observed value by 3.41 deaths. Each previous and subsequent year’s difference between the expected and observed rates will vary to a greater or lesser degree depending on the size of the population under study (see below). This variation can be measured to determine how well the line fits or models the observed data.

In the time series figures, the investigator will find several statistical tools to assist in the analyses of trend lines and fitted rates. These tools include the coefficient of determination, percent change values, and slope coefficients. These tools enable the investigator to form not only a mental picture of the comparative impact of mortality by cause on a region and population but to also gain insight into what the near demographic future holds for them.

Coefficients of determination (R²) are provided to indicate how well the fitted trend line predicts or explains the observed rates. When variation in the observed rates is relatively high (the fitted trend line does not correspond well to the observed trend line) R² approaches 0.0, when the variation is low, R² approaches 1.0. A low R² implies low reliability and a larger R² indicates that a greater degree of confidence can be placed in the trend line. The trend lines are generally unreliable when R² is less than 0.10, moderately reliable when R² is between 0.10 and 0.35, and most reliable when R² is equal to or greater than 0.35. Graphically, data points, data lines and trend lines are weighted according to their reliability and significance. The thinnest, trend lines are for those where R² is less than 0.10 and should be considered not reliable. The thickest lines are used for trends where the R² is equal to or greater than 0.35. In some cases, the trend lines do not fit the data well (i.e. small R²). In other words, the presentation of a trend line does not necessarily indicate a linear trend in the data line. In several instances a non-linear trend may be present. It should be noted that the linear trend modeling undertaken here is a major simplification of real world processes. These processes are dynamical in nature and can be modeled and fitted with certain limitations and assumptions. Time series of epidemic infectious disease mortality rates typically exhibit a curvilinear pattern. A marked curvilinear pattern is seen in the mortality series for HIV/AIDS mortality, general cancer mortality, and several others which can be approximated into at least two sequential linear segments. Each segment is joined to another in the sequence at a point in time or year. In this series (#2), we begin to explore alternative methods for examining trends that show discontinuities and reversals within the set of time series observations, particularly within the mortality time series for HIV/AIDS.
Percent change provides a measure of the estimated change in mortality over the most recent period (2005-2020). The percent value is followed by the term increase or decrease to help denote the direction of the overall trend. This information is in boldface and included with the $R^2$ value and the equation of the line. Percent change and the direction of that change is provided on the graphs for trends where $R^2$ is greater than 0.10.

Another tool is the equation of the line that fits a trend among the observed data point (the rates). The slope coefficient of this equation, $b$, is the estimated/expected number of deaths per unit of time ($x$) or the rate of change in deaths per annum. The direction of change is indicated with a negative sign preceding the $b$ and if positive, $b$ is unsigned. Visually, a negative slope shows a trend decreasing in annual rates from left to right and a positive slope will be rising (increasing) from left to right. An examination of the different slopes for regional or demographic group trends will quickly reveal that they are not equal. Visual inspection combined with slope coefficients also provides a means for making comparisons between any two trend line series in the time series figure. Trends will diverge, converge, or run parallel with one another indicating, respectively, increasing separation, decreasing separation, or very little change in rates between two trend lines. Setting two equations of the line equal to one another can yield an estimated year of convergence in the future (or the year the two trends diverged in the past). However, the investigator is cautioned to not put too much stock in the results if the forward or backward projections are very distant in time, especially when $R^2$ is low. Recent (or temporally adjacent) short term trends with good correspondence between the fitted trend line and observed trend line will be better indicators of rates in the near future or past (if historical rates are unknown).

The final tool is the pair of comparison tables located in the lower portion of the page. The tables, found in every time series figure (except the ones showing comparisons by race and disparity) are structured so that the reader can make comparisons of rates derived from the equation of the line (i.e., the fitted rates) among all regions or demographic groups portrayed in the figure. The 2005 and 2020 tables compare the fitted rates calculated for the beginning and end of the observed time series in terms of percent difference. Returning to figure 6.3 ii, ENC41’s age-adjusted fitted rate for cerebrovascular disease in 2005 is 5% greater than (GT) RNC’s fitted rate. In 2020, ENC41’s fitted rate is 17% greater than (GT) RNC’s fitted rate. The tables permit a quick assessment of trends calculated from observed time series data.

The reader should notice that some data lines in the trend figures fluctuate widely. This fluctuation is due to two main factors. In a small population, the number of deaths may vary widely from year-to-year and lead to large changes in annual mortality and premature mortality rates, a phenomenon known as the effect of small numbers. In addition, because mortality is based on the age of death, any fluctuation in the distribution of deaths across age groups from year-to-year can cause rates to change dramatically. Both the number of deaths and the age of decedents influence trends in mortality. The reader should evaluate all available data carefully before drawing conclusions about current, past and future mortality patterns.

**Caveats about the Concepts of Race, Gender, and Geography**

Several caveats are offered about the concepts of race, gender, and geography as they apply to the analysis of mortality patterns. While we do intend to bring attention to the stark racial inequalities in mortality across North Carolina, we do not mean to imply that this is a biological phenomenon. Other factors such as differences in socioeconomic status, educational attainment, occupation, and lifestyle probably account for the large racial gaps in mortality rates. Likewise, gender inequalities may have less to do with biological differences between men and women than with socially structured gender roles, health behaviors, occupational exposures, and use of health services. Finally, it is important to consider that county borders may not always be the most appropriate way to look at specific health problems. Few of our health care problems begin or end at political boundary lines and many of our health problems in North Carolina are common to large groups of counties. Counties
and larger regions composed of counties are convenient units of data collection and readers should not jump to conclusions about health problems or possible solutions based solely on the way data appear when aggregated to this level. In some cases, data at multi-county, zip code, or minor civil division levels are a better way to understand problems and solutions. Similarly, as indicated in Healthy Carolinians 2030, consideration needs to be given to whether or not a county is characterized as rural or urban, as this can be an indication to the level of development and amount of resources available in a county.
**General References**


**Cited References**

4. Current Disparities in Mortality by Geography, Race and Gender, and Race: Total and Five Leading Causes of Death
Figure 4.1 i. General leading causes of death for ENC41 (2020), NC (2020), and US (2020). Mortality rate per 100,000 population.

**ENC41**

- Diseases of Heart: 46%
- Cancer - All Sites: 19%
- Cerebrovascular Disease: 19%
- All Other Deaths: 6%
- COVID-19: 5%

1135 deaths/100,000

**North Carolina**

- Diseases of Heart: 46%
- Cancer - All Sites: 19%
- Cerebrovascular Disease: 19%
- All Other Deaths: 6%
- All Other Unintentional Injuries and Adverse Effects: 5%
- COVID-19: 5%

1035 deaths/100,000

**United States**

- Diseases of Heart: 46%
- Cancer - All Sites: 20%
- Cerebrovascular Disease: 18%
- All Other Deaths: 5%
- All Other Unintentional Injuries and Adverse Effects: 5%
- COVID-19: 5%

1027 deaths/100,000

2020 NC rate is 1% higher than US rate

Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4.1 ii. General leading causes of death for ENC41 (2020), NC (2020), and US (2020). Age-adjusted mortality rate per 100,000 population.

ENC41: 932 deaths/100,000
North Carolina: 858 deaths/100,000
United States: 835 deaths/100,000

- Diseases of Heart: ENC41 19%, North Carolina 19%, United States 20%
- COVID-19: ENC41 5%, North Carolina 5%, United States 5%
- Cancer - All Sites: ENC41 19%, North Carolina 18%, United States 10%
- All Other Unintentional Injuries and Adverse Effects: ENC41 5%, North Carolina 7%, United States 18%
- All Other Deaths: ENC41 5%, North Carolina 6%, United States 5%

2020 NC age-adj. rate is 3% higher than US

Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4.2 i. General leading causes of death for ENC41 (2020) by race and gender. Mortality rate per 100,000 population.

Non-White Males

Diseases of Heart 44%  
Cancer - All Sites 16% 
Cerebrovascular Disease 10% 
Chronic Lower Respiratory Diseases 6% 
Diabetes Mellitus 5% 
COVID-19 7% 
Alzheimers Disease 19% 
All Other Unintentional Injuries and Adverse Effects 10% 
All Other Deaths 19%

2020 ENC41 NWM rate is 7% lower than 2020 ENC41 WM rate

1280 deaths/100,000  1193 deaths/100,000

Non-White Females

Diseases of Heart 45%  
Cancer - All Sites 16% 
Cerebrovascular Disease 10% 
Chronic Lower Respiratory Diseases 6% 
Diabetes Mellitus 5% 
COVID-19 7% 
Alzheimers Disease 18% 
All Other Unintentional Injuries and Adverse Effects 10% 
All Other Deaths 44%

2020 ENC41 NWF rate is 1% higher than 2020 ENC41 WF rate

1057 deaths/100,000  1049 deaths/100,000

White Males

Diseases of Heart 21%  
Cancer - All Sites 19% 
Cerebrovascular Disease 7% 
Chronic Lower Respiratory Diseases 7% 
Diabetes Mellitus 6% 
COVID-19 6% 
Alzheimers Disease 19% 
All Other Unintentional Injuries and Adverse Effects 18% 
All Other Deaths 40%

White Females

Diseases of Heart 19%  
Cancer - All Sites 18% 
Cerebrovascular Disease 6% 
Chronic Lower Respiratory Diseases 6% 
Diabetes Mellitus 6% 
COVID-19 6% 
Alzheimers Disease 18% 
All Other Unintentional Injuries and Adverse Effects 19% 
All Other Deaths 45%

Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4.2 ii. General leading causes of death for ENC41 (2020) by race and gender. Age-adjusted mortality rate per 100,000 population.

Non-White Males

- 1382 deaths/100,000
- Age-adjusted rate is 36% higher than 2020 ENC41 WM age-adjusted rate

Non-White Females

- 886 deaths/100,000
- Age-adjusted rate is 25% higher than 2020 ENC41 WF age-adjusted rate

White Males

- 1015 deaths/100,000

White Females

- 710 deaths/100,000

Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4.3 i. General leading causes of death for ENC41 (2020) by race. Mortality rate per 100,000 population.

Non-White

- Diseases of Heart: 45%
- Cancer - All Sites: 10%
- Cerebrovascular Disease: 16%
- Chronic Lower Respiratory Diseases: 6%
- Diabetes Mellitus: 5%
- COVID-19: 4%
- Alzheimers Disease: 3%
- All Other Unintentional Injuries and Adverse Effects: 6%
- All Other Deaths: 9%

1163 deaths/100,000

White

- Diseases of Heart: 45%
- Cancer - All Sites: 6%
- Cerebrovascular Disease: 6%
- Chronic Lower Respiratory Diseases: 6%
- Diabetes Mellitus: 5%
- COVID-19: 5%
- Alzheimers Disease: 4%
- All Other Unintentional Injuries and Adverse Effects: 6%
- All Other Deaths: 6%

2020 ENC41 NW rate is 4% higher than 2020 ENC41 W rate

Slices without percentages constitute less than 5% of the deaths within that chart.
Figure 4.3 ii. General leading causes of death for ENC41 (2020) by race. Age-adjusted mortality rate per 100,000 population.

**Non-White**

2020 ENC41 NW age-adjusted rate is 29% higher than 2020 ENC41 W age-adjusted rate

- **Diseases of Heart**: 45%
- **Cancer - All Sites**: 18%
- **Cerebrovascular Disease**: 16%
- **Chronic Lower Respiratory Diseases**: 10%
- **Diabetes Mellitus**: 6%
- **COVID-19**: 5%
- **Alzheimers Disease**: 6%
- **All Other Unintentional Injuries and Adverse Effects**: 6%
- **All Other Deaths**: 4%

1103 deaths/100,000

**White**

- **Diseases of Heart**: 43%
- **Cancer - All Sites**: 20%
- **Cerebrovascular Disease**: 20%
- **Chronic Lower Respiratory Diseases**: 6%
- **Diabetes Mellitus**: 6%
- **COVID-19**: 5%
- **Alzheimers Disease**: 6%
- **All Other Unintentional Injuries and Adverse Effects**: 6%
- **All Other Deaths**: 2%

853 deaths/100,000

Slices without percentages constitute less than 5% of the deaths within that chart.
5. Trends and Disparities in Mortality in ENC41:
All Causes of Death and All Causes of Premature Mortality; 1990-2020
All Causes of Death

- ENC’s all-cause mortality rate trend is increasing, and the yearly rate showed a large jump in 2020. The trend is 11% greater than RNC and 8% greater than NC. The ENC rate trend has increased 23% over the 16-year period.

- The age-adjusted all-cause mortality rate for ENC had been declining prior to 2020. The rate trend declined 7% over the 16-year period. ENC’s trend is 7% greater than NC and 9% greater then RNC.

- The rate trend is highest for non-White males, followed by White males, non-White females and White females.

- The 16-year rate trends for all cause mortality for both non-Whites and Whites are declining. Yearly rates for 2020 increased. The non-White trend is 17% greater then the White trend.

- Racial disparity increased in 2020, but the 16-year rate trend is flat and unreliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 5.1: All Causes of Death: Trends in mortality rates for ENC41, RNC59, and NC 1990-2020 with projections to 2030

ENC41 16-yr trendline: 23% increase
R2 = 0.61
y = 11.68x + 823.28

RNC59 16-yr trendline: 16% increase
R2 = 0.58
y = 7.66x + 784.86

NC 16-yr trendline: 18% increase
R2 = 0.59
y = 8.74x + 796.22

Comparison of Fitted Rates in 2005

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<tr>
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Comparison of Fitted Rates in 2020

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</tr>
<tr>
<td>8% GT</td>
<td>3% LT</td>
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</tbody>
</table>

2005 ENC41 rate is 5% greater than RNC59
2020 ENC41 rate is 11% greater than RNC59

RNC59 16-yr trendline: 16% increase
R2 = 0.58
y = 7.66x + 784.86

NC 16-yr trendline: 18% increase
R2 = 0.59
y = 8.74x + 796.22

ENC41 16-yr trendline: 23% increase
R2 = 0.61
y = 11.68x + 823.28

Mortality rate per 100,000 population

R2 = 0.61
R2 = 0.58
R2 = 0.59
Figure 5.1 ii. All Causes of Death:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline
7% decrease
R2 = 0.20
y = -3.62x + 886.92

RNC59 16-yr trendline
6% decrease
R2 = 0.27
y = -3.20x + 808.85

NC 16-yr trendline
7% decrease
R2 = 0.26
y = -3.39x + 831.40

US 16-yr trendline
6% decrease
R2 = 0.14
y = -2.82x + 777.17

2005 ENC41 rate is 10% greater than RNC59
2020 ENC41 rate is 9% greater than RNC59

Comparison of Fitted Rates in 2005

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Comparison of Fitted Rates in 2020

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Trends and Disparities in Mortality in Eastern North Carolina - 41 Counties

Report #2.203, December 2022
Health Systems Research and Development, Dept. of Public Health, ECU

Figure 5.1 iii. All Causes of Death:
Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

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<th>LT 43%</th>
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<th>WM 16-yr trendline 8% decrease</th>
<th>NWF 16-yr trendline 11% decrease</th>
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<tbody>
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<td>20% GT</td>
<td>17% LT</td>
<td>y = -5.95x + 1,241.54</td>
<td>y = -5.00x + 998.98</td>
<td>y = -5.68x + 833.25</td>
<td>y = -2.72x + 711.42</td>
</tr>
<tr>
<td>WM</td>
<td>49% GT</td>
<td>20% GT</td>
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<td>NWF</td>
<td>75% GT</td>
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<td>17% GT</td>
<td>NWF</td>
<td>NWF</td>
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<tr>
<td>WF</td>
<td>20% LT</td>
<td>33% LT</td>
<td>43% LT</td>
<td>NWM</td>
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R2 = 0.11
y = -5.95x + 1,241.54

Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>Race</th>
<th>LT 20%</th>
<th>LT 35%</th>
<th>LT 42%</th>
<th>NWM 16-yr trendline 8% decrease</th>
<th>WM 16-yr trendline 8% decrease</th>
<th>NWF 16-yr trendline 11% decrease</th>
<th>WF 16-yr trendline 6% decrease</th>
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<td>24% GT</td>
<td>25% GT</td>
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<td>NWM</td>
<td>WM</td>
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<td>WM</td>
<td>49% GT</td>
<td>20% GT</td>
<td>17% GT</td>
<td>WM</td>
<td>WM</td>
<td>WM</td>
<td>WM</td>
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<tr>
<td>NWF</td>
<td>75% GT</td>
<td>40% GT</td>
<td>17% GT</td>
<td>NWF</td>
<td>NWF</td>
<td>NWF</td>
<td>NWF</td>
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<tr>
<td>WF</td>
<td>20% LT</td>
<td>38% LT</td>
<td>12% GT</td>
<td>WF</td>
<td>WF</td>
<td>WF</td>
<td>WF</td>
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</table>

R2 = 0.33
y = -5.00x + 998.98

R2 = 0.22
y = -5.68x + 833.25

R2 = 0.38
y = -2.72x + 711.42

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Health Systems Research and Development, Dept. of Public Health, ECU
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Figure 5.1 iv. All Causes of Death:
Trends in age-adjusted mortality rates by race for ENC41,
1990-2020 with projections to 2030

NW 16-yr trendline
8% decrease
R2 = 0.13
y = -5.03x + 996.29

W 16-yr trendline
7% decrease
R2 = 0.33
y = -3.45x + 840.70

2005 non-White rate is 19% greater than White
2020 non-White rate is 17% greater than White
Figure 5.1 v. All Causes of Death:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

$R^2 = 0.02$

$y = -0.13x + 18.48$
All Causes of Premature Mortality

- ENC’s premature mortality rate trend increased in 2020, and shows a 7% increase over the 16-year period. ENC is 17% greater than NC and 24% greater than RNC. The trends for NC and RNC are not reliable.

- The ENC’s age-adjusted premature mortality rate increased in 2020. However, the rate trends for ENC, NC, and RNC and the US are all unreliable.

- Premature mortality rate trends for all demographic groups increased in 2020. The trends for non-White males, White males, and non-White females are unreliable. The trend for White females increased 7% over the 16-year period.

- The non-White rate is 49% greater than the White rate, but the trends are not reliable.

- The racial disparity trend is not reliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 

Figure 5.2 i. All Causes of Premature Mortality:
Trends in premature mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

ENC41 16-yr trendline

RNC59 16-yr trendline

NC 16-yr trendline

7% increase

R² = 0.11

R² = 0.04

R² = 0.06

y = 4.12x + 897.06

y = 1.68x + 745.08

y = 2.22x + 789.36

2005 ENC41 rate is 20% greater than RNC59
2020 ENC41 rate is 24% greater than RNC59

Comparison of Fitted Rates in 2005

ENC41  RNC59  NC
20% GT  17% LT  12% LT

Comparison of Fitted Rates in 2020

ENC41  RNC59  NC
24% GT  20% LT  14% LT

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Figure 5.2 ii. All Causes of Premature Mortality: Trends in age-adjusted premature mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
US 16-yr trendline

$R^2 = 0.04$
$y = 2.42x + 868.47$

$R^2 = 0.00$
$y = -0.31x + 716.96$

$R^2 = 0.00$
$y = 0.24x + 760.84$

$R^2 = 0.02$
$y = 1.12x + 683.90$

2005 ENC41 rate is 21% greater than RNC59
2020 ENC41 rate is 27% greater than RNC59

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>17% LT</td>
<td>12% LT</td>
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<td>ENC41</td>
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<tr>
<td>21% GT</td>
<td>6% GT</td>
<td>5% LT</td>
<td>RNC59</td>
</tr>
<tr>
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<td>NC</td>
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<tr>
<td>27% GT</td>
<td>5% GT</td>
<td>11% GT</td>
<td>US</td>
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</table>

Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>21% LT</td>
<td>16% LT</td>
<td>23% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>27% GT</td>
<td>7% GT</td>
<td>2% LT</td>
<td>RNC59</td>
</tr>
<tr>
<td>18% GT</td>
<td>7% LT</td>
<td>8% LT</td>
<td>NC</td>
</tr>
<tr>
<td>29% GT</td>
<td>2% GT</td>
<td>9% GT</td>
<td>US</td>
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</table>
Figure 5.2 iii. All Causes of Premature Mortality:
Trends in age-adjusted premature mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th></th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td>51% GT</td>
<td>34% LT</td>
<td>39% LT</td>
<td>61% LT</td>
<td>NWM</td>
</tr>
<tr>
<td>63% GT</td>
<td>8% LT</td>
<td>41% LT</td>
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</tr>
<tr>
<td>157% GT</td>
<td>57% GT</td>
<td></td>
<td></td>
<td>WF</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th></th>
<th>NWM</th>
<th>WM</th>
<th>NWF</th>
<th>WF</th>
</tr>
</thead>
<tbody>
<tr>
<td>51% GT</td>
<td>36% LT</td>
<td>44% LT</td>
<td>61% LT</td>
<td>NWM</td>
</tr>
<tr>
<td>63% GT</td>
<td>8% LT</td>
<td>12% LT</td>
<td>39% LT</td>
<td>WM</td>
</tr>
<tr>
<td>154% GT</td>
<td>63% GT</td>
<td>44% GT</td>
<td></td>
<td>WF</td>
</tr>
</tbody>
</table>
Figure 5.2 iv. All Causes of Premature Mortality:
Trends in age-adjusted premature mortality rates by race for ENC41, 1990-2020 with projections to 2030

2005 non-White rate is 50% greater than White
2020 non-White rate is 49% greater than White
Figure 5.2 v. All Causes of Premature Mortality:
Measuring disparity in age-adjusted premature mortality rates by race for ENC41,
1990-2020 with projections to 2030

Racial Disparity

\[ R^2 = 0.00 \]
\[ y = -0.10x + 50.34 \]
6. Trends and Disparities in Mortality in ENC41:
Ten Specific Leading Causes of Death, 1990-2020
Diseases of Heart

- ENC’s heart disease rate trend is flat over the 16-year period, although the trend is not reliable. The data line for recent years has ticked up. The rate trend for NC has declined 5% and for RNC has declined 7% over the period.

- ENC’s age-adjusted heart disease rate is 13% greater than NC and 7% greater than the US rate. All three rates have decreased at a similar pace over the recent 16-year period.

- The rate for non-White males is the highest and has decreased 21% over the 16-year period, compared to 26% for the White male rate. The non-White male rate has ticked up in recent years. The non-White female rate is decreasing the most and is set to converge with the White female rate.

- The non-White rate is 14% higher than the White rate in 2020 and ticked up this year. The 16-year trend for both is decreasing.

- The trend for racial disparity is not reliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.1. Diseases of Heart:
Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline

7% decrease
5% decrease

R2 = 0.00
R2 = 0.24
R2 = 0.12

y = 0.12x + 206.21
y = -0.78x + 183.43
y = -0.55x + 190.07

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2005 ENC41 rate is 12% greater than RNC59
2020 ENC41 rate is 21% greater than RNC59

This will be copied and pasted onto the graph at the bottom of the plot area.

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>12% GT</td>
<td>11% LT</td>
<td>8% LT</td>
</tr>
<tr>
<td>8% GT</td>
<td>3% LT</td>
<td>ENC41</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>21% GT</td>
<td>17% LT</td>
<td>13% LT</td>
</tr>
<tr>
<td>14% GT</td>
<td>6% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>21% GT</td>
<td>6% GT</td>
<td>RNC59</td>
</tr>
<tr>
<td>14% GT</td>
<td>6% LT</td>
<td>NC</td>
</tr>
</tbody>
</table>
Figure 6.1 ii. Diseases of Heart:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>16% LT</td>
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<td>RNC59</td>
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<tr>
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<td>5% LT</td>
<td>3% GT</td>
<td>NC</td>
</tr>
<tr>
<td>9% GT</td>
<td>8% LT</td>
<td>3% LT</td>
<td>US</td>
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</table>

Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
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<tbody>
<tr>
<td>16% LT</td>
<td>12% LT</td>
<td>7% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>19% GT</td>
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<tr>
<td>13% GT</td>
<td>5% LT</td>
<td>5% GT</td>
<td>NC</td>
</tr>
<tr>
<td>7% GT</td>
<td>10% LT</td>
<td>5% LT</td>
<td>US</td>
</tr>
</tbody>
</table>
Figure 6.1 iii. Diseases of Heart:
Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

R2 = 0.58
\[ y = -3.91x + 302.66 \]

R2 = 0.83
\[ y = -4.46x + 271.67 \]

R2 = 0.77
\[ y = -3.87x + 199.10 \]

R2 = 0.88
\[ y = -2.94x + 170.44 \]
Figure 6.1 iv. Diseases of Heart: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

- NW 16-yr trendline: 26% decrease
  \[ R^2 = 0.74 \]
  \[ y = -3.87x + 241.79 \]
- W 16-yr trendline: 26% decrease
  \[ R^2 = 0.87 \]
  \[ y = -3.55x + 215.10 \]
Figure 6.1 v. Diseases of Heart:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

$R^2 = 0.01$

$y = 0.11x + 12.08$
All Other Unintentional Injuries and Adverse Effects

- Mortality from unintentional injuries and adverse effects is increasing in ENC (149% increase over 16 years). The trends for RNC and NC are also increasing, but the ENC rate is increasing faster.

- The age-adjusted mortality rate trend for ENC, RNC, NC and the US are all increasing. ENC’s rate trend increased the most, 134% over the 16-year period.

- The 16-year trends for White males, non-White males, and White females are all increasing significantly (145%, 121%, and 115% respectively). The rate for non-White females is increasing, but not as much.

- The White rate has increased 135% over the 16-year period. The non-White rate has increased 129%.

- The trend for racial disparity is not reliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.2 i. All Other Unintentional Injuries and Adverse Effects: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030.
Figure 6.2 ii. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030.

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
US 16-yr trendline

EN Chennai41 rate is 12% less than RNC59
2005 ENC41 rate is 12% less than RNC59

Comparison of Fitted Rates in 2005
Comparison of Fitted Rates in 2020

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
US 16-yr trendline

134% increase
81% increase
94% increase
97% increase

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
US 16-yr trendline

R2 = 0.74
R2 = 0.73
R2 = 0.74
R2 = 0.85

y = 1.72x + 20.53
y = 1.17x + 23.23
y = 1.32x + 22.51
y = 1.25x + 20.46

This will be copied and pasted onto the graph at the bottom of the page.

Box 2
2005 ENC41 rate is 12% less than RNC59
2020 ENC41 rate is 13% greater than RNC59
This will be copied and pasted onto the graph at the bottom of the plot area.
Figure 6.2 iii. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

<table>
<thead>
<tr>
<th>Race/Gender</th>
<th>1990-2020 Trendline</th>
<th>2005 Trendline</th>
<th>2020 Trendline</th>
</tr>
</thead>
<tbody>
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<td>NWM</td>
<td>y = 1.85x + 24.36</td>
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<tr>
<td>WM</td>
<td>y = 2.57x + 28.29</td>
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<td></td>
</tr>
<tr>
<td>NWF</td>
<td>y = 0.68x + 11.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WF</td>
<td>y = 1.24x + 17.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>Race/Gender</th>
<th>16% GT</th>
<th>54% LT</th>
<th>29% LT</th>
<th>NWM 16 yr trendline</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWM</td>
<td>14%</td>
<td>LT</td>
<td>118%</td>
<td>NWF 16 yr trendline</td>
</tr>
<tr>
<td>WM</td>
<td>41%</td>
<td>GT</td>
<td>35%</td>
<td>WF 16 yr trendline</td>
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<tr>
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<td>41%</td>
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<td>WF</td>
<td>41%</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>Race/Gender</th>
<th>28% GT</th>
<th>59% LT</th>
<th>31% LT</th>
<th>NWM 16 yr trendline</th>
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<tbody>
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<td>NWM</td>
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<td>LT</td>
<td>118%</td>
<td>NWF 16 yr trendline</td>
</tr>
<tr>
<td>WM</td>
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<td>35%</td>
<td>WF 16 yr trendline</td>
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<td>GT</td>
<td>35%</td>
<td>WF 16 yr trendline</td>
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<td>WF</td>
<td>41%</td>
<td>GT</td>
<td>35%</td>
<td>WF 16 yr trendline</td>
</tr>
</tbody>
</table>
Figure 6.2 iv. All Other Unintentional Injuries and Adverse Effects:
Trends in age-adjusted mortality rates by race for ENC41,
1990-2020 with projections to 2030

- NW 16-yr trendline
  - 129% increase
  - $R^2 = 0.50$
  - $y = 1.31x + 16.14$

- W 16-yr trendline
  - 135% increase
  - $R^2 = 0.80$
  - $y = 1.91x + 22.58$

2005 non-White rate is 29% less than White
2020 non-White rate is 30% less than White

This will be copied and pasted onto the graph at the bottom of the plot area.
Figure 6.2 v. All Other Unintentional Injuries and Adverse Effects: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

\[ R^2 = 0.04 \]
\[ y = -0.79x - 38.29 \]
Cerebrovascular Disease

- ENC’s cerebrovascular disease mortality rate trend shows a 16% increase over the recent 16-year period. It is 18% greater than the RNC rate and 13% greater than the NC rate.

- The age-adjusted rate has decreased 15% over the 16-year period. It is 17% greater than the RNC rate and 27% greater than the US rate.

- The non-White male rate is the highest and has decreased 19% over the 16-year period. The non-White female rate has decreased 26% and is set to converge with the White male and female rates. The White male and White female rates are about the same.

- The non-White rate in 2020 is 32% greater than the White rate but is decreasing more rapidly (23% over the 16-year period). Both rates are projected to converge in the future.

- There is a 37% decrease in racial disparity between Whites and non-Whites over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.3 i. Cerebrovascular Disease:
Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% LT</td>
<td>2% GT</td>
<td>ENC41</td>
</tr>
<tr>
<td>2% LT</td>
<td>1% LT</td>
<td>RNC59</td>
</tr>
</tbody>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>18% GT</td>
<td>15% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>13% GT</td>
<td>5% LT</td>
<td>RNC59</td>
</tr>
<tr>
<td>2% LT</td>
<td>5% LT</td>
<td>NC</td>
</tr>
</tbody>
</table>

2005 ENC41 rate is 2% less than RNC59
2020 ENC41 rate is 18% greater than RNC59

2% GT
15% LT
13% GT

11% LT
5% LT
5% LT

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline

16% increase
R2 = 0.24
y = 0.49x + 47.66

R2 = 0.05
y = -0.15x + 48.69

R2 = 0.00
y = 0.03x + 48.42

This will be copied and pasted onto the graph at the bottom of the plot area.
Figure 6.3 ii. Cerebrovascular Disease: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th></th>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>5% GT</td>
<td>4% LT</td>
<td>3% LT</td>
<td>16% LT</td>
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Comparison of Fitted Rates in 2020

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2005 ENC41 rate is 5% greater than RNC59
2020 ENC41 rate is 17% greater than RNC59
Figure 6.3 iii. Cerebrovascular Disease:
Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

NWM 16-yr trendline
19% decrease
R2 = 0.25
y = -0.89x + 75.87

WM 16-yr trendline
12% decrease
R2 = 0.22
y = -0.34x + 46.30

NWF 16-yr trendline
26% decrease
R2 = 0.41
y = -1.05x + 64.19

WF 16-yr trendline
11% decrease
R2 = 0.14
y = -0.31x + 45.19
Figure 6.3 iv. Cerebrovascular Disease: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

2005 non-White rate is 51% greater than White
2020 non-White rate is 32% greater than White

23% decrease
R² = 0.39
y = -1.00x + 69.57

11% decrease
R² = 0.20
y = -0.32x + 46.19
Figure 6.3 v. Cerebrovascular Disease: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
37% decrease
R² = 0.26
y = -1.18x + 50.47
Cancer - Trachea, Bronchus, Lung

- The cancer—TBL rate trend for ENC has decreased 13% over the recent 16-year period. The ENC rate is 21% greater than the RNC rate. The RNC rate has decreased 24%.

- In 2020 the age-adjusted rate for ENC was 17% above the RNC rate. The ENC rate decreased 37% over the 16-year period, while the RNC rate decreased 42%.

- In 2020 the non-White male rate was the highest but is only 5% higher than the White male rate, is decreasing, and will likely converge soon. The mortality rate for White females is 38% higher than the rate for non-White females and decreased 30% over the period. The rate for non-White females decreased 20%.

- The non-White mortality rate is 12% less than the White rate. Both are decreasing over the 16-year period at about the same pace.

- The 16-year rate trend for racial disparity is unreliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.4 i. Cancer - Trachea, Bronchus, Lung: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030.

ENC41 16-yr trendline
13% decrease
R² = 0.64
\( y = -0.53x + 65.49 \)

RNC59 16-yr trendline
24% decrease
R² = 0.91
\( y = -0.89x + 60.77 \)

NC 16-yr trendline
21% decrease
R² = 0.90
\( y = -0.80x + 62.16 \)

2005 ENC41 rate is 8% greater than RNC59
2020 ENC41 rate is 21% greater than RNC59

Comparison of Fitted Rates in 2005

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Figure 6.4 ii. Cancer - Trachea, Bronchus, Lung:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline  RNC59 16-yr trendline  NC 16-yr trendline  US 16-yr trendline
37% decrease  42% decrease  40% decrease  41% decrease
R2 = 0.96  R2 = 0.98  R2 = 0.99  R2 = 0.99
y = -1.55x + 66.55  y = -1.59x + 61.03  y = -1.58x + 62.60  y = -1.41x + 55.22

2005 ENC41 rate is 9% greater than RNC59
2020 ENC41 rate is 17% greater than RNC59

Comparison of Fitted Rates in 2005

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Comparison of Fitted Rates in 2020

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<td>14% GT</td>
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</table>
Figure 6.4 iii. Cancer - Trachea, Bronchus, Lung:
Trends in age-adjusted mortality rates by race and gender for ENC41,
1990-2020 with projections to 2030

NWM 16-yr trendline
46% decrease
R² = 0.88
y = -2.92x + 101.50

WM 16-yr trendline
44% decrease
R² = 0.92
y = -2.53x + 92.75

NWF 16-yr trendline
20% decrease
R² = 0.39
y = -0.40x + 32.66

WF 16-yr trendline
30% decrease
R² = 0.85
y = -0.97x + 51.29

### Comparison of Fitted Rates in 2005

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<th>WM</th>
<th>NWF</th>
<th>WF</th>
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<td>184% GT</td>
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### Comparison of Fitted Rates in 2020

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Figure 6.4 iv. Cancer - Trachea, Bronchus, Lung: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

2005 non-White rate is 14% less than White
2020 non-White rate is 12% less than White

- NW 16-yr trendline
  - 36% decrease
  - R² = 0.87
  - y = -1.35x + 59.50

- W 16-yr trendline
  - 37% decrease
  - R² = 0.94
  - y = -1.60x + 68.92
Figure 6.4 v. Cancer - Trachea, Bronchus, Lung:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

$R^2 = 0.02$

$y = 0.18x - 16.82$
Chronic Lower Respiratory Diseases

- The ENC rate trend for CLRD in 2020 is increasing faster than RNC or NC—27% over the 16-year period compared to 9% for RNC and 14% for NC.

- The age-adjusted rate for 2020 for ENC, RNC and NC are virtually equal. The US rate is 7% lower than ENC. The rate trend for ENC is decreasing.

- The age-adjusted rate for White males is the highest. The rates for White males and non-White males are decreasing. The rate for non-White females is lower but shows a 39% increase. The rate for White females is unreliable.

- The White rate has decreased 13% over the 16-year period. The non-White rate is 36% less than the White rate but the trend is unreliable.

- The racial disparity trend has seen a 37% increase over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.5 i. Chronic Lower Respiratory Diseases: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

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Comparison of Fitted Rates in 2020

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<td>1% GT</td>
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Figure 6.5 ii. Chronic Lower Respiratory Diseases:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

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Comparison of Fitted Rates in 2020

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<tr>
<td>8% GT</td>
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R2 = 0.39
y = -0.28x + 46.29

R2 = 0.66
y = -0.50x + 50.09

R2 = 0.65
y = -0.44x + 49.01

R2 = 0.61
y = -0.33x + 44.04

2005 ENC41 rate is 8% less than RNC59
2020 ENC41 rate is 1% less than RNC59
Figure 6.5 iii. Chronic Lower Respiratory Diseases: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

<table>
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<th>WM</th>
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<th>WF</th>
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<td>193% GT</td>
<td>278% GT</td>
<td>171% GT</td>
<td>NWF</td>
<td>76% GT</td>
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<td>8% GT</td>
<td>40% GT</td>
<td>63% LT</td>
<td>WF</td>
<td>10% LT</td>
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R2 = 0.34, y = -0.60x + 49.53
R2 = 0.66, y = -1.00x + 63.86
R2 = 0.57, y = 0.41x + 16.88
R2 = 0.01, y = -0.06x + 45.69

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<th>WM</th>
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Comparison of Fitted Rates in 2005

Comparison of Fitted Rates in 2020

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Figure 6.5 iv. Chronic Lower Respiratory Diseases: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030.

NW 16-yr trendline
W 16-yr trendline

13% decrease

R² = 0.07

y = 0.10x + 28.17

R² = 0.46

y = -0.42x + 52.81

2005 non-White rate is 47% less than White
2020 non-White rate is 36% less than White
Figure 6.5 v. Chronic Lower Respiratory Diseases:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
37% increase
$R^2 = 0.43$
$y = 2.01x - 87.69$
Alzheimer’s Disease

- The Alzheimer’s mortality rate for ENC shows a 218% increase over the recent 16-year period. ENC’s rate is 12% less than RNC and 9% less than NC but ENC’s rate of increase was larger than both RNC and NC.

- Over the 16-year period the age-adjusted rate for ENC has increased by 108%. The ENC rate is 12% less than the RNC rate and 9% less than NC. ENC has the highest rate increase.

- The mortality rates for females, both White and non-White, are greater than for males. Non-White females have the highest rate of increase (166% over 16 years).

- The non-White mortality rate for Alzheimer’s has increased 162% over the 16-year period. In 2020 the non-White rate is 9% greater than the White rate.

- The racial disparity between non-White to White has increase 175% over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.6 i. Alzheimer’s Disease:
Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
218% increase
73% increase
98% increase
R2 = 0.88
R2 = 0.83
R2 = 0.87
y = 1.73x + 12.71
y = 1.19x + 25.97
y = 1.35x + 22.16

Comparison of Fitted Rates in 2005
ENC41
RNC59
NC
104% GT
74% GT
ENC41
51% LT
15% LT
RNC59
43% LT
17% GT
NC

Comparison of Fitted Rates in 2020
ENC41
RNC59
NC
13% GT
10% GT
ENC41
12% LT
3% LT
RNC59
9% LT
3% GT
NC

2005 ENC41 rate is 51% less than RNC59
2020 ENC41 rate is 12% less than RNC59


R2 = 0.88
R2 = 0.83
R2 = 0.87
y = 1.73x + 12.71
y = 1.19x + 25.97
y = 1.35x + 22.16

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2005 ENC41 rate is 51% less than RNC59
2020 ENC41 rate is 12% less than RNC59
This will be copied and pasted onto the graph at the bottom of the plot area.

ENC41
RNC59
NC
51% LT
15% LT
RNC59
43% LT
17% GT
NC

NC
Figure 6.6 ii. Alzheimer’s Disease:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline
108% increase
R2 = 0.84
y = 1.13x + 16.70

RNC59 16-yr trendline
39% increase
R2 = 0.67
y = 0.68x + 27.98

NC 16-yr trendline
51% increase
R2 = 0.77
y = 0.80x + 24.93

US 16-yr trendline
42% increase
R2 = 0.74
y = 0.58x + 21.81

Comparison of Fitted Rates in 2005
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Figure 6.6 iii. Alzheimer’s Disease: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

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<tr>
<th></th>
<th>NWM 10% GT</th>
<th>WM 26% GT</th>
<th>NWF 64% GT</th>
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Comparison of Fitted Rates in 2020

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<th>WF 5% LT</th>
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<th>WM 47% LT</th>
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<td>25%</td>
<td>30%</td>
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NWM 16-yr trendline
153% increase
R2 = 0.86
y = 1.14x + 11.97

WM 16-yr trendline
106% increase
R2 = 0.83
y = 0.87x + 13.22

NWF 16-yr trendline
166% increase
R2 = 0.81
y = 1.57x + 15.10

WF 16-yr trendline
93% increase
R2 = 0.78
y = 1.15x + 19.67
Figure 6.6 iv. Alzheimer’s Disease: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

- 2005 non-White rate is 19% less than White
- 2020 non-White rate is 9% greater than White

NW 16-yr trendline

\[ y = 1.44x + 14.22 \]

NW 16-yr trendline

\[ y = 1.01x + 17.62 \]

W 16-yr trendline

\[ R^2 = 0.86 \]

\[ R^2 = 0.82 \]
Figure 6.6 v. Alzheimer’s Disease:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
175% increase
$R^2 = 0.57$
$y = 1.75x - 15.96$
Diabetes Mellitus

- ENC's diabetes mortality rate is 35% greater than RNC in 2020. The rate for ENC increased 35% over the 16-year period.
- ENC’s age-adjusted rate is flat over the 16-year period but the trend is unreliable. The trends for RNC and NC are also unreliable.
- The rate for non-White males is the highest and is increasing (20% increase over the 16-year period). The White male rate has increased 16%. The non-White female rate has decreased 30% and the White female rate has decreased 9%.
- The non-White mortality rate decreased 11% over the 16-year period but remains 112% greater than the White rate. The White rate is unreliable.
- The trend for racial disparity shows a 24% decrease in racial disparity over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.7 i. Diabetes Mellitus: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030.

ENC41 16-yr trendline
35% increase
R2 = 0.53
y = 0.60x + 27.41

RNC59 16-yr trendline
41% increase
R2 = 0.63
y = 0.50x + 19.34

NC 16-yr trendline
38% increase
R2 = 0.62
y = 0.52x + 21.69

Comparison of Fitted Rates in 2005
ENC41 42% GT
ENC41 29% LT
RNC59 12% GT
RNC59 21% LT
NC 11% LT
NC 29% LT

Comparison of Fitted Rates in 2020
ENC41 35% GT
ENC41 26% LT
RNC59 10% GT
RNC59 19% LT
NC 9% LT
NC 23% LT

2005 ENC41 rate is 42% greater than RNC59
2020 ENC41 rate is 35% greater than RNC59
Figure 6.7 ii. Diabetes Mellitus:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline
RNC59 16-yr trendline
NC 16-yr trendline
US 16-yr trendline

10% increase

ENC41
RNC59
NC
US

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>47% GT</td>
<td>32% LT</td>
<td>23% LT</td>
<td>24% LT</td>
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<tr>
<td>30% GT</td>
<td>13% GT</td>
<td>12% LT</td>
<td>ENC41</td>
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<tr>
<td>31% GT</td>
<td>11% LT</td>
<td>1% LT</td>
<td>NC</td>
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<tr>
<td>36% GT</td>
<td>3% LT</td>
<td>11% LT</td>
<td>US</td>
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Comparison of Fitted Rates in 2020

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<th>RNC59</th>
<th>NC</th>
<th>US</th>
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<tr>
<td>31% GT</td>
<td>36% GT</td>
<td>2% LT</td>
<td>US</td>
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</table>

2005 ENC41 rate is 47% greater than RNC59
2020 ENC41 rate is 34% greater than RNC59

ENC41 rate is 47% greater than RNC59
ENC41 rate is 34% greater than RNC59
at the bottom of the plot area.
Figure 6.7 iii. Diabetes Mellitus: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

<table>
<thead>
<tr>
<th>Race</th>
<th>16-yr Trendline</th>
<th>Increase/Decrease</th>
<th>R²</th>
<th>Equation</th>
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</thead>
<tbody>
<tr>
<td>NWM</td>
<td>20% increase</td>
<td>R² = 0.36</td>
<td>y = 0.62x + 50.30</td>
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<tr>
<td>WM</td>
<td>16% increase</td>
<td>R² = 0.16</td>
<td>y = 0.24x + 24.86</td>
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</tr>
<tr>
<td>NWF</td>
<td>30% decrease</td>
<td>R² = 0.54</td>
<td>y = -0.98x + 52.65</td>
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<tr>
<td>WF</td>
<td>9% decrease</td>
<td>R² = 0.11</td>
<td>y = -0.10x + 18.07</td>
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Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
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<th>5% GT</th>
<th>64% LT</th>
<th>NWM</th>
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<tr>
<td>NWM</td>
<td>45</td>
<td>68</td>
<td>62</td>
<td>45</td>
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<tr>
<td>WM</td>
<td>21</td>
<td>31</td>
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<td>41</td>
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<td>41</td>
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<tr>
<td>WF</td>
<td>17</td>
<td>27</td>
<td>24</td>
<td>17</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>Race</th>
<th>52% LT</th>
<th>36% LT</th>
<th>72% LT</th>
<th>NWM</th>
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<tbody>
<tr>
<td>NWM</td>
<td>102% GT</td>
<td>112% GT</td>
<td>27% LT</td>
<td>WM</td>
</tr>
<tr>
<td>WM</td>
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<tr>
<td>NWF</td>
<td></td>
<td>57% GT</td>
<td>25% LT</td>
<td>56% LT</td>
</tr>
<tr>
<td>WF</td>
<td></td>
<td>259% GT</td>
<td>72% GT</td>
<td>129% GT</td>
</tr>
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</table>
Figure 6.7 iv. Diabetes Mellitus:
Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

NW 16-yr trendline
11% decrease
R2 = 0.17
y = -0.35x + 52.09

W 16-yr trendline
R2 = 0.04
y = 0.07x + 21.01

2005 non-White rate is 148% greater than White
2020 non-White rate is 112% greater than White
Figure 6.7 v. Diabetes Mellitus:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
24% decrease
R^2 = 0.40
y = -2.23x + 146.82
Nephritis, Nephrotic Syndrome, and Nephrosis

- The ENC mortality rate trend for nephritis, nephrotic syndrome, and nephrosis is unreliable. The trend for RNC59 has increased 10% over the 16-year period and the NC trend has increased 7%.

- The age-adjusted ENC rate is about equal to the NC rate but the 16-year rate trend for ENC has decreased more than NC and is set to drop below NC.

- The 16-year trends for non-White males and females are higher than those for White males and females. Non-White females show the greatest decrease, 36% over 16 years. White females have the lowest rates.

- In 2020 the non-White rate was 124% greater than the White rate and has the same decrease rate (28%) as the White rate over the 16-year period.

- The racial disparity trend is unreliable over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.8 i. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41 16-yr trendline</th>
<th>RNC59 16-yr trendline</th>
<th>NC 16-yr trendline</th>
</tr>
</thead>
<tbody>
<tr>
<td>R² = 0.00</td>
<td>R² = 0.26</td>
<td>R² = 0.14</td>
</tr>
<tr>
<td>y = 0.00x + 20.36</td>
<td>y = 0.11x + 17.20</td>
<td>y = 0.08x + 18.11</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>16% LT</td>
<td>11% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>18% GT</td>
<td>5% GT</td>
<td>RNC59</td>
</tr>
<tr>
<td>12% GT</td>
<td>5% LT</td>
<td>NC</td>
</tr>
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</table>

2005 ENC41 rate is 18% greater than RNC59
2020 ENC41 rate is 8% greater than RNC59
Figure 6.8 ii. Nephritis, Nephrotic Syndrome, and Nephrosis:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030
Figure 6.8 iii. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030.
Figure 6.8 iv. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

2005 non-White rate is 125% greater than White
2020 non-White rate is 124% greater than White

NW 16-yr trendline
28% decrease
$R^2 = 0.44$
y = -0.65x + 36.97

W 16-yr trendline
28% decrease
$R^2 = 0.68$
y = -0.29x + 16.45
Figure 6.8 v. Nephritis, Nephrotic Syndrome, and Nephrosis: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

\[ R^2 = 0.00 \]
\[ y = 0.02x + 124.59 \]
Unintentional Motor Vehicle Injuries

- ENC’s unintentional motor vehicle injury mortality rate trend is decreasing but is still 44% greater than RNC in 2020.

- The ENC age-adjusted rate is 47% greater than RNC and 63% greater than the US. The 16-year rate trends for ENC, RNC, and NC are all decreasing, although the ENC numbers have ticked up in the last 2 years.

- The rate for non-White males is not reliable. The non-White female trend is increasing, and the trends for White males and White females are declining.

- The White rate trend has decreased 40% over the 16-year period. The non-White rate has increased 21% over 16 years and is 71% greater than the White rate in 2020.

- Racial disparity has increased significantly over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.9 i. Unintentional Motor Vehicle Injuries: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

ENC41 16-yr trendline 19% decrease  
R2 = 0.21  
y = -0.26x + 22.40

RNC59 16-yr trendline 17% decrease  
R2 = 0.18  
y = -0.16x + 15.21

NC 16-yr trendline 18% decrease  
R2 = 0.21  
y = -0.20x + 17.29

Comparison of Fitted Rates in 2005

ENC41 | RNC59 | NC  
---|---|---
32% LT | 23% LT | ENC41
47% GT | 14% GT | RNC59
30% GT | 12% LT | NC

Comparison of Fitted Rates in 2020

ENC41 | RNC59 | NC  
---|---|---
31% LT | 22% LT | ENC41
44% GT | 12% GT | RNC59
28% GT | 11% LT | NC
Figure 6.9 ii. Unintentional Motor Vehicle Injuries:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline
20% decrease
R2 = 0.24
y = -0.28x + 22.34

RNC59 16-yr trendline
21% decrease
R2 = 0.25
y = -0.20x + 15.29

NC 16-yr trendline
21% decrease
R2 = 0.27
y = -0.23x + 17.34

US 16-yr trendline
21% decrease
R2 = 0.36
y = -0.18x + 13.77

2005 ENC41 rate is 46% greater than RNC59
2020 ENC41 rate is 47% greater than RNC59

Comparison of Fitted Rates in 2005

Comparison of Fitted Rates in 2020
Figure 6.9 iii. Unintentional Motor Vehicle Injuries:
Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

Comparison of Fitted Rates in 2020

- NWM 16-yr trendline
- WM 16-yr trendline
- NWF 16-yr trendline
- WF 16-yr trendline

**R2** values:
- NWM = 0.03
- WM = 0.63
- NWF = 0.15
- WF = 0.53

**Equations:**
- NWM: $y = 0.24x + 33.85$ (40% decrease)
- WM: $y = -0.82x + 32.42$ (29% increase)
- NWF: $y = 0.19x + 10.36$ (38% decrease)
- WF: $y = -0.34x + 14.21$
Figure 6.9 iv. Unintentional Motor Vehicle Injuries: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

2005 non-White rate is 11% less than White
2020 non-White rate is 71% greater than White
Figure 6.9 v. Unintentional Motor Vehicle Injuries: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
495% increase
R² = 0.70
y = 5.50x - 17.77
Pneumonia and Influenza

- The mortality rate trend for pneumonia and influenza for ENC has increased 13% over the 16-year period. The trend for RNC has decreased by 11% and the NC trend is unreliable.

- The age-adjusted rate trends for all NC regions are similar and are decreasing. The ENC rate is 19% greater than the US rate.

- The age-adjusted rate trends for White males and White females are decreasing. The trends for non-White males and non-White females are unreliable.

- The White rate trend has decreased 22% over the 16-year period. The non-White rate is unreliable.

- Racial disparity has increased 163% over the 16-year period.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 6.10 i. Pneumonia and Influenza:
Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

ENC41 16-yr trendline
13% increase
R2 = 0.21
y = 0.14x + 16.53

RNC59 16-yr trendline
11% decrease
R2 = 0.15
y = -0.14x + 20.43

NC 16-yr trendline
R2 = 0.04
y = -0.06x + 19.32
Figure 6.10 ii. Pneumonia and Influenza: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

ENC41 16-yr trendline: 17% decrease, \( R^2 = 0.38 \), \( y = -0.20x + 18.48 \)

RNC59 16-yr trendline: 28% decrease, \( R^2 = 0.62 \), \( y = -0.37x + 21.02 \)

NC 16-yr trendline: 26% decrease, \( R^2 = 0.63 \), \( y = -0.33x + 20.33 \)

US 16-yr trendline: 33% decrease, \( R^2 = 0.76 \), \( y = -0.40x + 18.92 \)

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
</tr>
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<td>10% GT</td>
<td>2% GT</td>
<td>ENC41</td>
</tr>
<tr>
<td>12% LT</td>
<td>3% LT</td>
<td>10% LT</td>
<td>RNC59</td>
</tr>
<tr>
<td>9% LT</td>
<td>3% GT</td>
<td>7% LT</td>
<td>NC</td>
</tr>
<tr>
<td>2% LT</td>
<td>11% GT</td>
<td>7% GT</td>
<td>US</td>
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Comparison of Fitted Rates in 2020

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<tr>
<td>19% GT</td>
<td>19% GT</td>
<td>19% GT</td>
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</table>
Figure 6.10 iii. Pneumonia and Influenza: Trends in age-adjusted mortality rates by race and gender for ENC41, 1990-2020 with projections to 2030

- NWM 16-yr trendline
  - 23% decrease
  - R2 = 0.07
  - y = -0.22x + 21.94

- WM 16-yr trendline
  - 24% decrease
  - R2 = 0.29
  - y = -0.30x + 21.19

- NWF 16-yr trendline
  - R2 = 0.01
  - y = -0.03x + 14.72

- WF 16-yr trendline
  - R2 = 0.58
  - y = -0.26x + 17.61

Comparison of Fitted Rates in 2005

Comparison of Fitted Rates in 2020
Figure 6.10 iv. Pneumonia and Influenza: Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

- 22% decrease
- \( R^2 = 0.02 \)
- \( y = -0.06x + 17.06 \)

- 2005 non-White rate is 10% less than White
- 2020 non-White rate is 7% greater than White

- \( R^2 = 0.49 \)
- \( y = -0.26x + 18.96 \)
Figure 6.10 v. Pneumonia and Influenza: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
163% increase
R2 = 0.17
y = 1.39x - 13.62
7. Trends and Disparities in Mortality in ENC41:
Cancer - All Sites and HIV Disease;
1990-2020
Cancer - All Sites

- The cancer - all sites mortality rate trend for ENC is greater than NC and has seen a 3% increase over the last 16 years. RNC has decreased by 2% and the trend for NC is unreliable.

- The age-adjusted cancer - all sites mortality rate trends for ENC, RNC, NC and the US are all decreasing at about the same pace. The ENC rate trend is 9% greater than RNC and 10% greater than the US.

- The rate for non-White males has decreased 35% over 16 years and the White male rate has decreased 25%. The non-White female and White female rates are about the same.

- Both White and non-White cancer – all sites mortality rates are decreasing over the 16-year period, although non-White rates are 9% greater than Whites.

- The 16-year trend for racial disparity shows a 44% decrease.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 7.1 i. Cancer - All Sites: Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

- ENC41 16-yr trendline: 3% increase, R2 = 0.19, \( y = 0.38x + 200.00 \)
- RNC59 16-yr trendline: 2% decrease, R2 = 0.19, \( y = -0.25x + 187.60 \)
- NC 16-yr trendline: 3% increase, R2 = 0.03, \( y = -0.09x + 191.23 \)

Comparison of Fitted Rates in 2005

- ENC41: 6% LT
- RNC59: 4% LT
- NC: ENC41

Comparison of Fitted Rates in 2020

- ENC41: 11% LT
- RNC59: 8% LT
- NC: ENC41

2005 ENC41 rate is 7% greater than RNC59
2020 ENC41 rate is 12% greater than RNC59

Mortality rate per 100,000 population
Figure 7.1 ii. Cancer - All Sites:
Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

2005 ENC41 rate is 9% greater than RNC59
2020 ENC41 rate is 9% greater than RNC59

Comparison of Fitted Rates in 2005

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<th>RNC59</th>
<th>NC</th>
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Comparison of Fitted Rates in 2020

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<tr>
<td>10% LT</td>
<td>1% LT</td>
<td>3% GT</td>
<td>US</td>
</tr>
</tbody>
</table>
Figure 7.1 iii. Cancer - All Sites:
Trends in age-adjusted mortality rates by race and gender for ENC41,
1990-2020 with projections to 2030

NWM 16-yr trendline
WM 16-yr trendline
NWF 16-yr trendline
WF 16-yr trendline

35% decrease
25% decrease
20% decrease
22% decrease

R² = 0.89
R² = 0.95
R² = 0.68
R² = 0.92

y = -6.96x + 319.35 y = -3.90x + 248.43 y = -2.23x + 175.66 y = -2.23x + 164.34

Comparison of Fitted Rates in 2005

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<thead>
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<th>GT</th>
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<td>WF</td>
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<td>51%</td>
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Comparison of Fitted Rates in 2020

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<th>LT</th>
<th>GT</th>
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<td>WF</td>
<td>39%</td>
<td>8%</td>
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Health Systems Research and Development, Dept. of Public Health, ECU
Figure 7.1 iv. Cancer - All Sites:
Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

- NW 16-yr trendline
  - 27% decrease
  - $R^2 = 0.87$
  - $y = -3.88x + 228.29$
- W 16-yr trendline
  - 22% decrease
  - $R^2 = 0.97$
  - $y = -2.79x + 198.60$

2005 non-White rate is 15% greater than White
2020 non-White rate is 9% greater than White
Figure 7.1 v. Cancer - All Sites:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity
44% decrease
$R^2 = 0.18$
y = -0.42x + 15.11
HIV Disease

- The HIV mortality rate for ENC has decreased 76% over the past 16 years but was still 29% higher than RNC in 2020.
- The 16-year age-adjusted rate trend for ENC has been decreasing, but was still 35% greater than RNC and 32% greater than US.
- Non-White males continue to have the highest rate of age-adjusted mortality, but this rate has decreased 82% in a 16-year reliable trend. The rate for White males also decreased 82% and non-White females decreased 80%. A convergence of the non-White and White rate is expected in the future.
- The 16-year non-White age-adjusted HIV mortality rate has decreased by 82% but was 618% greater than White in 2020. The White rate has decreased by 74%. The two rates are projected to converge in the future.
- The racial disparity 16-year trend is not reliable.

Unless otherwise noted, trends are considered reliable if $R^2 \geq 0.35$, moderately reliable if $0.35 > R^2 \geq 0.10$, and unreliable if $R^2 < 0.10$. 
Figure 7.2 i. HIV Disease:
Trends in mortality rates for ENC41, RNC59, and NC, 1990-2020 with projections to 2030

<table>
<thead>
<tr>
<th>Year</th>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>20</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>1991</td>
<td>15</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>1992</td>
<td>10</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>1993</td>
<td>5</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>1994</td>
<td>3</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>1995</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>1996</td>
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<td>1</td>
<td>5</td>
</tr>
<tr>
<td>1997</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>1998</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1999</td>
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<td>2</td>
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</tr>
<tr>
<td>2000</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>2001</td>
<td>4</td>
<td>4</td>
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<td>2002</td>
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<td>5</td>
<td>1</td>
</tr>
<tr>
<td>2003</td>
<td>6</td>
<td>6</td>
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</tr>
<tr>
<td>2004</td>
<td>7</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>2005</td>
<td>8</td>
<td>8</td>
<td>1</td>
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</table>

ENC41 16-yr trendline: 76% decrease, \( R^2 = 0.91 \), \( y = -0.30x + 6.24 \)
RNC59 16-yr trendline: 71% decrease, \( R^2 = 0.89 \), \( y = -0.19x + 4.19 \)
NC 16-yr trendline: 73% decrease, \( R^2 = 0.94 \), \( y = -0.22x + 4.78 \)

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>33% LT</td>
<td>23% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>49% GT</td>
<td>14% GT</td>
<td>RNC59</td>
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Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>23% LT</td>
<td>17% LT</td>
<td>ENC41</td>
</tr>
<tr>
<td>29% GT</td>
<td>8% GT</td>
<td>RNC59</td>
</tr>
<tr>
<td>20% GT</td>
<td>7% LT</td>
<td>NC</td>
</tr>
</tbody>
</table>
Figure 7.2 ii. HIV Disease: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1990-2020 with projections to 2030

Comparison of Fitted Rates in 2005

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
<th>ENC41</th>
</tr>
</thead>
<tbody>
<tr>
<td>36% LT</td>
<td>26% LT</td>
<td>36% LT</td>
<td>ENC41</td>
<td></td>
</tr>
<tr>
<td>56% GT</td>
<td>15% GT</td>
<td>1% LT</td>
<td>RNC59</td>
<td></td>
</tr>
<tr>
<td>35% GT</td>
<td>13% GT</td>
<td>14% LT</td>
<td>NC</td>
<td></td>
</tr>
<tr>
<td>57% GT</td>
<td>1% GT</td>
<td>16% GT</td>
<td>US</td>
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</tbody>
</table>

Comparison of Fitted Rates in 2020

<table>
<thead>
<tr>
<th>ENC41</th>
<th>RNC59</th>
<th>NC</th>
<th>US</th>
<th>ENC41</th>
</tr>
</thead>
<tbody>
<tr>
<td>26% LT</td>
<td>19% LT</td>
<td>24% LT</td>
<td>ENC41</td>
<td></td>
</tr>
<tr>
<td>35% GT</td>
<td>9% GT</td>
<td>2% GT</td>
<td>RNC59</td>
<td></td>
</tr>
<tr>
<td>24% GT</td>
<td>8% LT</td>
<td>6% LT</td>
<td>NC</td>
<td></td>
</tr>
<tr>
<td>32% GT</td>
<td>2% LT</td>
<td>7% GT</td>
<td>US</td>
<td></td>
</tr>
</tbody>
</table>

2005 ENC41 rate is 56% greater than RNC59
2020 ENC41 rate is 35% greater than RNC59

ENC41 16-yr trendline
80% decrease
R2 = 0.92
y = -0.32x + 6.37

RNC59 16-yr trendline
76% decrease
R2 = 0.90
y = -0.19x + 4.09

NC 16-yr trendline
78% decrease
R2 = 0.94
y = -0.23x + 4.72

US 16-yr trendline
75% decrease
R2 = 0.93
y = -0.19x + 4.06
Trends and Disparities in Mortality in Eastern North Carolina-41 Counties

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Figure 7.2 iii. HIV Disease:
Figure 7.2 iv. HIV Disease:
Trends in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

NW 16-yr trendline
82% decrease
R² = 0.89
y = -0.82x + 16.04

W 16-yr trendline
74% decrease
R² = 0.79
y = -0.08x + 1.71

2005 non-White rate is 835% greater than White
2020 non-White rate is 618% greater than White
Figure 7.2 v. HIV Disease:
Measuring disparity in age-adjusted mortality rates by race for ENC41, 1990-2020 with projections to 2030

Racial Disparity

R² = 0.04
y = -9.58x + 866.25
### 8. Appendix

<table>
<thead>
<tr>
<th>Diseases of Heart</th>
<th>ICD10 Code</th>
<th>ICD 9 Code</th>
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<tbody>
<tr>
<td>Diseases of Heart</td>
<td>I00-I09, I11, I13, I20-I51</td>
<td>390-398, 402, 404, 410-429</td>
</tr>
<tr>
<td>Cerebrovascular Disease</td>
<td>I60-I69</td>
<td>430-434, 436-438</td>
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<tr>
<td>Atherosclerosis</td>
<td>I70</td>
<td>440</td>
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<tr>
<td>Cancer - All Sites</td>
<td>C00-C97</td>
<td>140-208</td>
</tr>
<tr>
<td>Cancer - Lip, Oral Cavity, Pharynx</td>
<td>C00-C14</td>
<td>140-149</td>
</tr>
<tr>
<td>Cancer - Stomach</td>
<td>C16</td>
<td>151</td>
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<tr>
<td>Cancer - Colon, Rectum, Anus</td>
<td>C18-C21</td>
<td>153-154</td>
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<td>Cancer - Liver</td>
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<tr>
<td>Cancer - Pancreas</td>
<td>C25</td>
<td>157</td>
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<tr>
<td>Cancer - Larynx</td>
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<td>Cancer - Trachea, Bronchus, Lung</td>
<td>C33-C34</td>
<td>162</td>
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<td>Cancer - Malignant Melanoma of Skin</td>
<td>C43</td>
<td>172</td>
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<td>Cancer - Breast</td>
<td>C50</td>
<td>174-175</td>
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<td>Cancer - Cervix Uteri</td>
<td>C53</td>
<td>180</td>
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<tr>
<td>Cancer - Ovary</td>
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<td>Cancer - Prostate</td>
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<tr>
<td>Cancer - Bladder</td>
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<td>Cancer - Brain</td>
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<td>Cancer - Non-Hodgkins Lymphoma</td>
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<td>Cancer - Leukemia</td>
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<td>Diabetes Mellitus</td>
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<td>Pneumonia and Influenza</td>
<td>J10-J18</td>
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<td>Chronic Lower Respiratory Diseases</td>
<td>J40-J47</td>
<td>490-494, 496</td>
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<td>Chronic Liver Disease and Cirrhosis</td>
<td>K70, K73-K74</td>
<td>571</td>
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<tr>
<td>Nephritis, Nephrotic Syndrome, and Nephrosis</td>
<td>N00-N07, N17-N19, N25-N27</td>
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<tr>
<td>Unintentional Motor Vehicle Injuries</td>
<td>V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V29, V80.3-V80.5, V81.0-V81.1, V82.0-V82.1, V83-V86, V87.0-V87.8, V88.0-V88.8, V89.0, V89.2</td>
<td>E810-E825</td>
</tr>
<tr>
<td>All Other Unintentional Injuries and Adverse Effects</td>
<td>V01, V05-V06, V09.1, V09.3-V09.9, V10-V11, V15-V18, V19.3, V19.8-V19.9, V80.0-V80.2, V80.6-V80.9, V81.2-V81.9, V82.2-V82.9, V87.9, V88.9, V89.1, V89.3, V89.9, V90-V99.9, W00-X59, Y85, Y86</td>
<td>E800-E807,E826-E829,E830-E848,E880-E928,E929.0-E929.9</td>
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<td>X60-X84, X87.0</td>
<td>E950-E959</td>
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<td>Homicide</td>
<td>X85-Y09, Y87.1</td>
<td>E960-E969</td>
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<td>Y35, Y89.0</td>
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