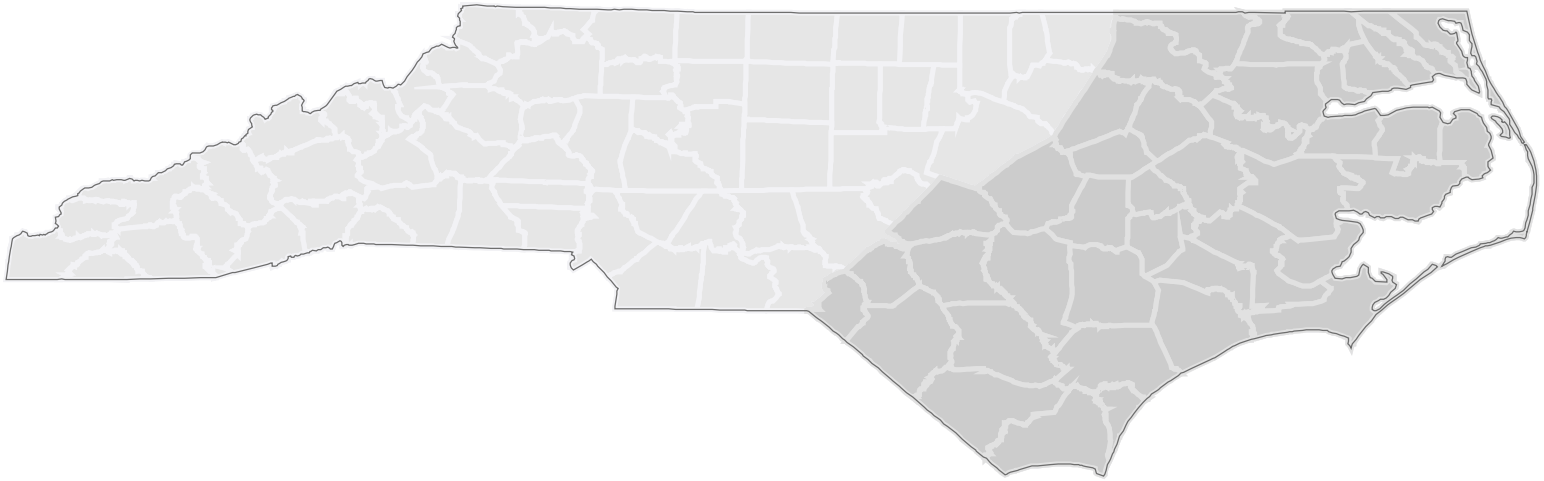
Trends and Disparities in Mortality in Eastern North Carolina

Total Deaths, Premature Mortality and Deaths for Ten Leading Causes; 1979-2015



A Resource for Healthy Communities

Health Indicator Series - Report #2.203
October 2018

Health Systems Research and Development
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Table of Contents

List of Figures

1. Introduction

Health Indicators Series:
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Report Series #2: Mortality Trends for Eastern North Carolina - (1979 to 2015)

Health Indicators is a series of reports describing community health at the state, regional, and county level. *Health Indicators* supplements the *North Carolina Health Data Explorer* published by the center for Health Systems Research and Development at East Carolina University. 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 of the overarching goals of *Healthy People 2020*, the national blueprint for health improvement. The first goal is to increase the span and quality of life and the second is to eliminate health disparities. North Carolina's companion plan, *Healthy North Carolina 2020,* has also embraced these two goals. 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 37-year period (1979-2015), as well as the most recent 17 year period (1999 to 2015). 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 2020. 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 2015, the age-adjusted mortality rate for Eastern North Carolina is 830 deaths per 100,000. This rate is 5% higher than the state rate. Within Eastern North Carolina, the non-White rate is 17% higher than the White rate. The non-White male rate is 26% higher than the rate for White males. The non-White female rate is 11% higher than the rate for White females.

The five general leading causes of mortality in Eastern North Carolina (2015) are:
1. Disease of Heart
2. Cancer - All Sites
3. Cerebrovascular Disease
4. Chronic Lower Respiratory Diseases
5. All Other Unintentional Injuries and Adverse Effects

The five general leading causes of mortality in Eastern North Carolina by race and gender (2015) are:

	Race and Gender			
	non-White Males	White Males	non-White Females	White Females
1st	Cancer - All Sites	Cancer - All Sites	Diseases of Heart	Diseases of Heart
2nd	Diseases of Heart	Diseases of Heart	Cancer - All Sites	Cancer - All Sites
3rd	Cerebrovascular Disease	Chronic Lower Respiratory Diseases	Cerebrovascular Disease	Cerebrovascular Disease
4th	Diabetes Mellitus	All Other Unintentional Injuries and Adverse Effects	Diabetes Mellitus	Diabetes Mellitus
5th	Unintentional Motor Vehicle Injuries	Cerebrovascular Disease	Alzheimer's Disease	Alzheimer's Disease

Trends in Mortality from All Causes

- ENC's all-cause mortality rate shows an increase for the last two years, but the 17-year trend is decreasing. ENC's rate is not decreasing as quickly as NC and RNC, creating an increase in regional disparity.
- The age-adjusted, all-cause mortality rate for ENC is decreasing over the 37 year period. Over the 17-year period, the trend shows greater decrease, and suggests the ENC rate will converge with the RNC and NC rates. ENC's fitted rate continues to remain 7% greater than the rate for RNC for 2015.

- The non-White male mortality rate remains higher than the other demographic groups but has had the greatest rate of decrease (31%) in the 17-year trend. Convergence of the non-White male rate with the White male rate is suggested in the future.
- The trends for all-cause mortality rates for both non-Whites and Whites are decreasing. The non-White rate is 13% greater than the White rate, but the recent 17-year trend suggests they will converge.
- Over the recent 17-year period there is a 54% decrease in racial disparity, in a reliable trend.

Trends in Premature Mortality from All Causes of Death

- ENC's premature mortality rate has ticked up in the last 2 years, but the 17-year trend shows a 12% decrease since 1999. RNC's trend has decreased 15%, and NC's has decreased 14%.
- The age-adjusted premature mortality trend for the 17-year period is also decreasing, but remains 24% higher than the RNC rate in 2015.
- The non-White male rate is significantly higher than the rates for any other demographic group, but also has the highest rate of decrease (slope of trend). White females have the lowest rate and the lowest rate of decrease.
- The non-White rate remains 38% greater than the White rate.
- A recent decrease in the premature mortality rate trend for non-Whites and leveling of the rates for Whites suggests a reduction in racial disparity.

Diseases of the Heart

- ENC's heart disease mortality rate trend is decreasing but not as quickly as the decrease for RNC and NC, resulting in an increased geographic disparity. In 1999, the fitted rate for ENC was 8% greater than RNC; by 2015 it was 18% greater than RNC.
- While ENC's age-adjusted mortality rate is decreasing at a pace equal to RNC, the ENC fitted rate remains 19% greater than RNC in 2015.
- The non-White male rate remains the highest but convergence with the White male rate is suggested in the future. The non-White female rate remains slightly higher than the White female rate but is decreasing more quickly and is suggested to fall below White females in the future.
- While the non-White rate remains 10% greater than the rate for Whites, the 17-year trends for both are decreasing, and convergence is suggested in the future.
- While the 37-year trend suggests an increase in racial disparity, the moderately reliable 17-year trend line for racial disparity suggests a 35% decrease.

Cancer – Trachea, Bronchus, Lung

- While the 37-year trends for Cancer—TBL indicate that all mortality rates are continuing to increase, the 17-year trend line suggests a slight decrease in all three regions.
- In 2015, the age-adjusted rate trend for ENC is 10% above the RNC rate and 21% above the US rate. During the period 1999-2015, the ENC rates have decreased at the same rate as NC.
- In 2015 the non-White male rate was the highest, but is decreasing the most quickly and will likely converge with the trend for White males in the next few years. The mortality rate for White females is decreasing. The rate for non-White females is unreliable.
- The non-White mortality rate is consistently lower than the White rate. Both rates are decreasing over the 17-year period, but the non-White rate is decreasing more quickly.
- The 17-year trend for racial disparity shows decrease, in a moderately reliable trend.

Cerebrovascular Disease

- ENC's cerebrovascular disease mortality rate has increased for the last 3 years, but the 17-year trend is decreasing in a similar trend to RNC and NC.
- While the ENC age-adjusted cerebrovascular disease mortality rate is 8% greater than the rate for the rest of the state, the trend is decreasing and converging on the RNC and NC rates. The *Healthy People 2010* goal of less than 48 deaths per 100,000 was met in 2010, but the rate ticked up slightly to 50 deaths per 100,000.
- Non-Whites males have the highest mortality rate for cerebrovascular disease. The rate has increased for the last 2 years, but the rate trend continues to decrease and converge with the other demographic groups. The greatest relative improvement in cerebrovascular disease mortality over 17 years is by non-White females who experienced a 57% decrease. The non-White male rate is decreasing and converging with White males, but is still 56% greater in 2015.
- The cerebrovascular disease mortality rate trend for non-Whites is decreasing and converging with that of whites but was still 39% greater than the White rate in 2015.
- The 17-year trend for racial disparity is unreliable.

Chronic Lower Respiratory Diseases

- CLRD mortality rates for ENC, RNC, and NC have increased 12%, 17%, and 15% respectively during the last 17 years. In 1999, the ENC trend was 2% less than RNC; in 2015 the ENC was 7% less than RNC.
- The 17-year CLRD age-adjusted rate for ENC is decreasing at a faster pace than the US rate. In 2015, the ENC rate trend was 8% less than RNC compared to 1999 when the ENC rate was 5% greater than RNC. The RNC and NC trends are unreliable.
- Fitted rates for non-White males and White males have decreased over 17 years by 38% and 29%, respectively. The rate for White males remains the highest and although decreasing, is diverging from the non-White male rate. The 17-year trend for White females has increased 6%. The rate for non-White females is unreliable.
- The 17-year White mortality rates are greater than non-White rates and the rate of decline is less for Whites, leading to a divergence more favorable to non-Whites.
- There is a 30% decrease in the disparity between White rates and non-White rates in a moderately reliable trend.

All Other Unintentional Injuries and Adverse Effects

- Mortality from unintentional injuries and adverse effects is increasing in ENC (65% increase over 17 years). The trends for RNC and NC are also increasing and all three have converged.
- The age-adjusted mortality rate trend for ENC, RNC and NC are increasing. All three increased 37% or more over the 17 years.
- The 17-year trends for White males and White females are increasing significantly (64% and 111% increase, respectively). Mortality rates for non-White males and non-White females have decreased but the trends are not reliable.
- White rates have increased 81% over the 17 year period. Non-White rates have dropped below white rates, but the trend is unreliable.
- Between 1999 and 2015, racial disparity has decreased sharply, eliminating the unfavorable disparity in relation to whites, and favoring non-Whites.

Diabetes Mellitus

- According to the 17-year trend, all diabetes mellitus mortality rates are decreasing but the rate of decline is less for ENC suggesting a divergence from RNC and NC. In 1999 ENC was 33% greater than RNC. In 2015, the rate trend for ENC was 36% greater than RNC.
- The 17-year trend for age-adjusted diabetes mellitus mortality rates shows a decrease of 26% for ENC. In 2015, the ENC age-adjusted diabetes mellitus rate trend remained 37% greater than RNC and 32% greater than the US.
- Rates for all subgroups are decreasing over the recent 17 year period. Rates for non-White males remain the highest. The rate for White males is decreasing the least (15% over 17 years).
- The non-White mortality rate trend decreased over 17 years by 29% but remain 127% greater than the White rate in 2015.
- The decreasing trend for racial disparity is moderately reliable and suggests a 14% decrease in racial disparity.

Alzheimer's Disease

- The Alzheimer's mortality rate for ENC shows a 126% increase over the 17-year period. ENC's rate of increase was larger than RNC (55%) and NC (68%) but the rate trend for ENC still remains 27% less than RNC.
- In 2015, the age-adjusted rate trend for ENC is even with the US rate and has increased 69% over the 17 years. This is a larger increase than both RNC and NC (33% and 40% respectively), although those rates are higher.
- The mortality rates for females, both White and non-White, are greater than that of non-White and White males. All the rates are increasing over the 17-year trend.
- The non-White mortality rate for Alzheimer's has increased 126% over the 17-year trend, and has converged with the White rate.
- The racial disparity has shifted and now favors Whites.

Unintentional Motor Vehicle Injuries

- ENC's unintentional motor vehicle mortality rate trend is decreasing but is still 49% greater than RNC in 2015.
- The ENC age-adjusted rate trend is 50% greater than RNC and 65% greater than the US. Rates for ENC, RNC and NC are all decreasing.
- The rate for non-White males is the highest and has ticked up. The 17-year trend rates for all groups are declining. The trend rate for White females is the lowest and has decreased the most (42% over 17 years).
- The non-White rate has increased for the last 2 years. Rate trends for Whites and non-Whites have decreased over the 17-year period.
- The racial disparity is increasing in a moderately reliable trend.

Nephritis, Nephrotic Syndrome, and Nephrosis

- Mortality due to nephritis, nephrotic syndrome, and nephrosis in ENC has increased by 13% over 17 years. The other regions have also experienced a similar increase during this time period. ENC rates were 12% greater than RNC in 2015.
- With age-adjustment, ENC has flat lined in an unreliable 17-year trend.
- The 17-year trends for non-White males and females are continually above those for White males and females, although the trend for non-White males is unreliable. The demographic group with the greatest rate of decrease is non-White females, decreasing 22% over 17 years. White females have the lowest rate and the rate for White males is unreliable.
- In 2015, the non-White rate trend was 113% greater than the White rate, but was declining. The White rate is unreliable.
- The trend for racial disparity is moderately reliable and suggests a 30% decrease in racial disparity.

Pneumonia and Influenza

- The mortality rate trend for pneumonia and influenza for ENC, RNC and NC have all declined over the 17-year period. The ENC rate in 2015 is 12% less than the RNC rate.
- The age-adjusted mortality rate trends for all NC regions are similar and are decreasing at about the same pace. The ENC rate is 11% higher than the US rate.
- The age-adjusted mortality rate trend for all four demographics are decreasing. The trends for non-White males and White males are the highest. Trend lines predict convergence of all four groups in the future.
- The Non-White mortality rate is 8% less than the White rate in 2015. Both are decreasing.
- The 17-year decreasing trend for racial disparity is unreliable.

Cancer – All Sites

- The cancer – all sites mortality rate trend for ENC has decreased slightly (3%) over 17 years. The RNC and NC rates have decreased more than ENC, causing these rates to diverge.
- The age-adjusted cancer – all sites mortality rates trends for ENC, RNC, NC and the US are all decreasing at about the same pace, although the ENC rate trend is 7% greater than RNC, and 10% greater than the US.
- The rate for non-White males has decreased 36% over 17 years, and is projected to converge with the rate for White males, which shows a 25% decrease. The rates for White females and non-White females show a slight decrease and are converging.
- Both White and non-White cancer mortality trends are decreasing over the 17 year period, although the non-White rate remains higher. Non-White rates decreased 28% and White rates decreased 20%, suggesting future convergence.
- The moderately reliable 17-year trend for racial disparity shows a 62% decrease.

HIV Disease

- The fitted HIV mortality rate for ENC has been decreasing over the past 17 years, but was still 61% greater than RNC in 2015.
- The 17-year age-adjusted rate trend for ENC had a 64% decrease. The 2015 ENC rate is 66% greater than RNC.
- Non-White males continue to have the highest rates of age-adjusted mortality, but this rate has also decreased 71% in a 17-year reliable trend. The White male rate decreased 55% during that same period and the rate for non-White females decreased 57%. A convergence of the non-White male rate with other rates is expected in the near future.
- The 17-year non-White age-adjusted HIV mortality rate has decreased by 66% in a reliable trend. The age-adjusted mortality rate for Whites decreased by 55%, although the absolute rate for this group is much lower.
- In a moderately reliable trend, the 17-year period shows a 28% decrease in racial disparity.

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 North Carolina Office of State Planning. For the US, data were obtained from the Compressed Mortality File compiled by the National Center for Health Statistics.

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 2015. Smaller areas like counties will usually be aggregated into 5-year intervals (e.g., 2011 to 2015). 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 37-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 37 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 2020 from known historical values (1979 to 2015) 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 6.4 ii the year 2005 is the 7th year in the series, so 7 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 chronic lower respiratory diseases (1979 to 2015), the 2005 *expected* or *fitted* age-adjusted rate is calculated to be 46.4 deaths per 100,000 people. The *observed* age-adjusted rate for 2005 is 47 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 2005 is .6—the model (the equation of the line) *underestimates* the observed value by .6 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 (R^2) are provided to indicate how well the fitted 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) R^2 approaches 0.0, when the variation is low, R^2 approaches 1.0. A low R^2 implies low reliability and a larger R^2 indicates that a greater degree of confidence can be placed in the trend line. The trend lines are generally unreliable when R^2 is less than 0.10, moderately reliable when R^2 is between 0.10 and 0.35, and most reliable when R^2 is equal to or greater than 0.35. Graphically, trend lines are weighted according to their reliability and significance. The thinnest, trend lines are for those where R^2 is less than 0.10 and should be considered not reliable. The thickest lines are used for trends where the R^2 is equal to or greater than 0.35. In some cases, the trend lines do not fit the data well (i.e. small R^2). 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 ten year period (1999-2015). 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 1999 and 2015 tables compare the fitted rates calculated for the beginning and end of the observed time series in terms of percent difference. Returning to figure 6.4 ii, ENC41's age-adjusted fitted rate for chronic lower respiratory diseases in 1999 is 5% greater than (GT) RNC's fitted rate. In 2015, ENC41's fitted rate is 8% less than (LT) 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 2020*, 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

Fastrup, J., Vinkeness, M., & O'Dell, M. (1996). *Public Health: A Health Status Indicator for Targeting Federal Aid to States.* Washington, DC: US General Accounting Office.

North Carolina Institute of Medicine. *Healthy North Carolina 2020: A Better State of Health.*

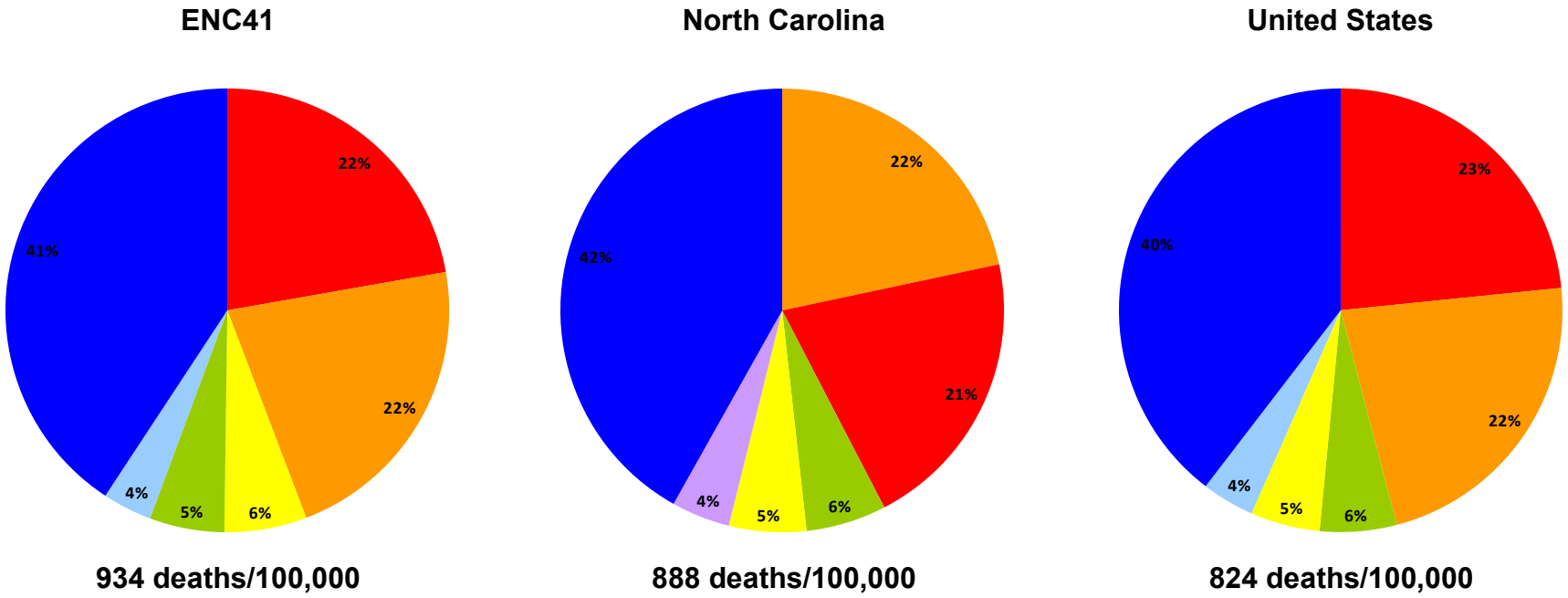
United States Department of Health and Human Services. *Healthy People 2020*. www.healthypeople.gov.

Cited References

Buescher, P. A. (1998). Age-adjusted death rates (13th ed.). Raleigh, North Carolina: North Carolina Center for Health Statistics.

4. Current Disparities in Mortality by Geography, Race and Gender, and Race: Total and Five Leading Causes of Death

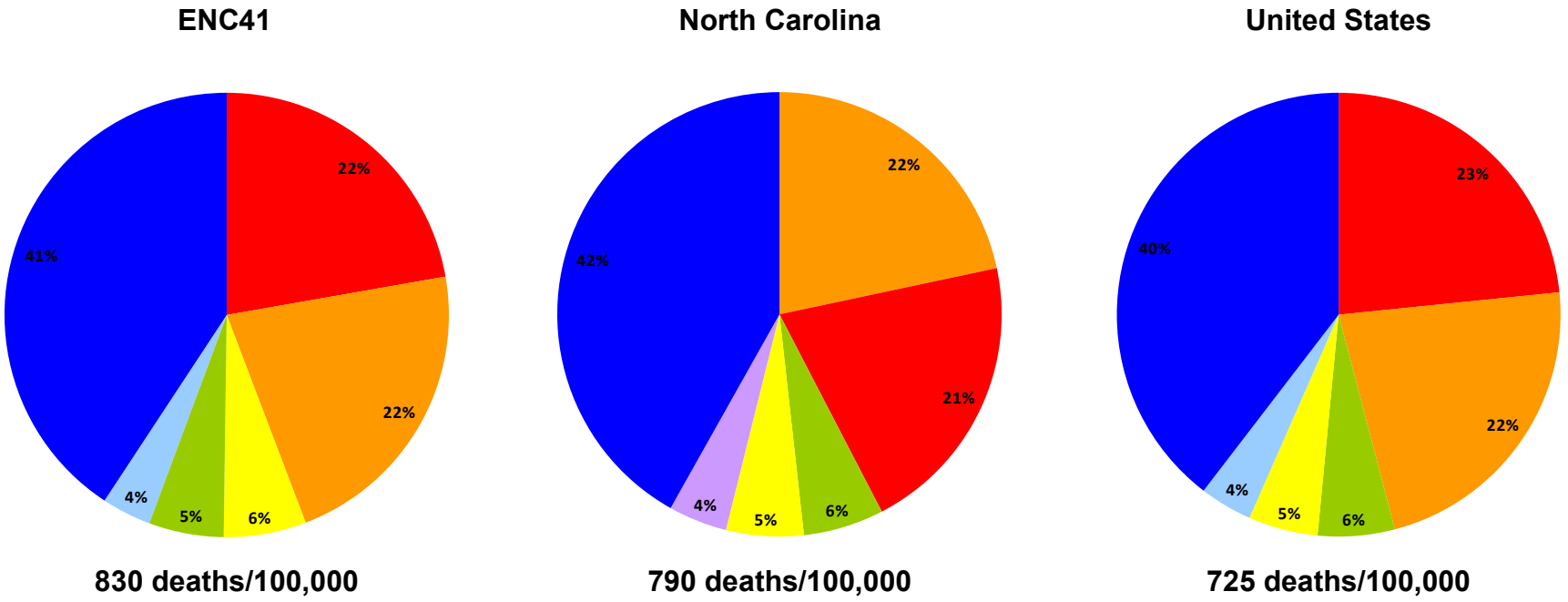
Figure 4.1 i. General leading causes of death for ENC41 (2015), NC (2015), and US (2014). Mortality rate per 100,000 population.



2015 NC rate is 8% higher than 2014 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 (2015), NC (2015), and US (2014). Age-adjusted mortality rate per 100,000 population.

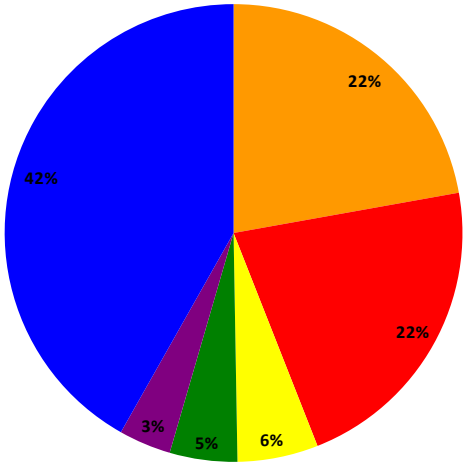


2015 NC age-adjusted rate is 9% higher than 2014 US age-adjusted rate

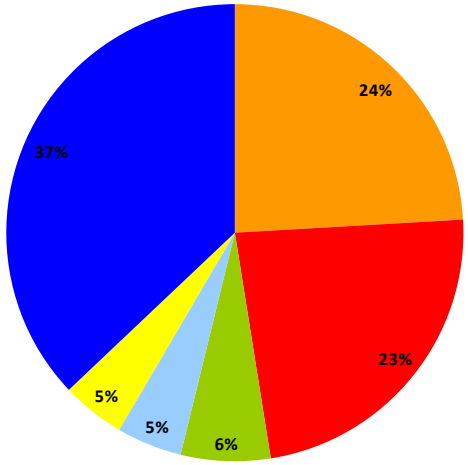
Slices without percentages constitute less than 5% of the deaths within that chart.

Figure 4.2 i. General leading causes of death for ENC41 (2015) by race and gender.
Mortality rate per 100,000 population.

Non-White Males



White Males

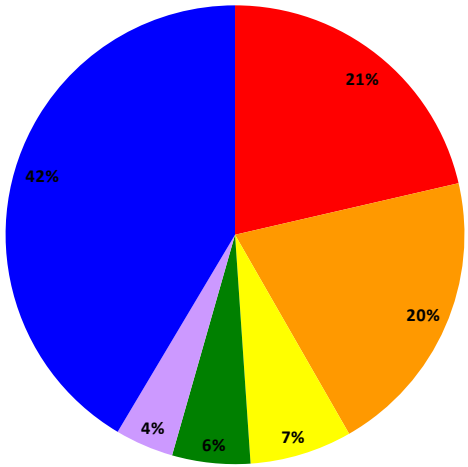


2015 ENC41 NWM rate is 2% lower than
2015 ENC41 WM rate

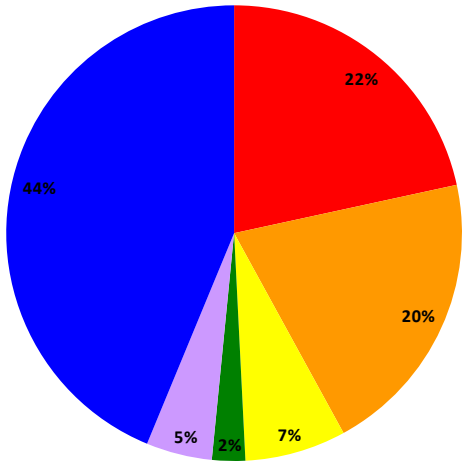
967 deaths/100,000 **988 deaths/100,000**

- Diseases of Heart
- Cancer - All Sites
- Cerebrovascular Disease
- Chronic Lower Respiratory Diseases
- Diabetes Mellitus
- Unintentional Motor Vehicle Injuries
- Alzheimers Disease
- All Other Unintentional Injuries and Adverse Effects
- All Other Deaths

Non-White Females



White Females



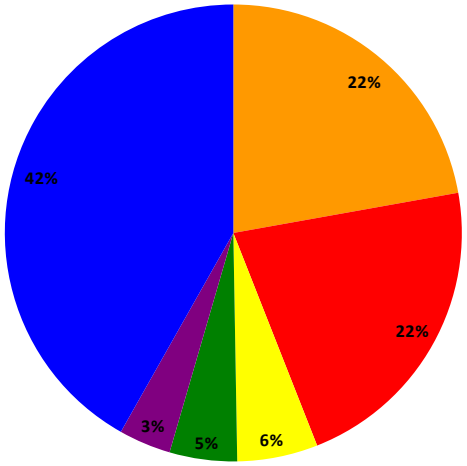
2015 ENC41 NWF rate is 12% lower than
2015 ENC41 WF rate

818 deaths/100,000 **927 deaths/100,000**

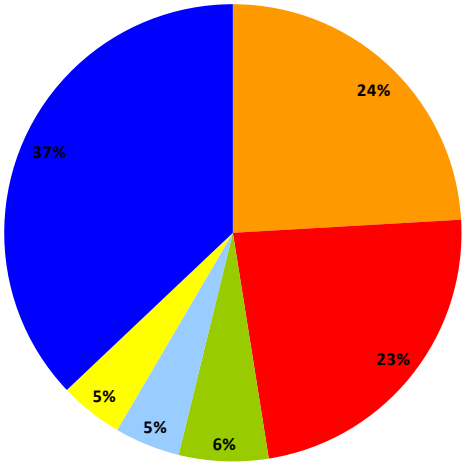
Slices without percentages constitute less than 5% of the deaths within that chart.

Figure 4.2 ii. General leading causes of death for ENC41 (2015) by race and gender.
Age-adjusted mortality rate per 100,000 population.

Non-White Males



White Males

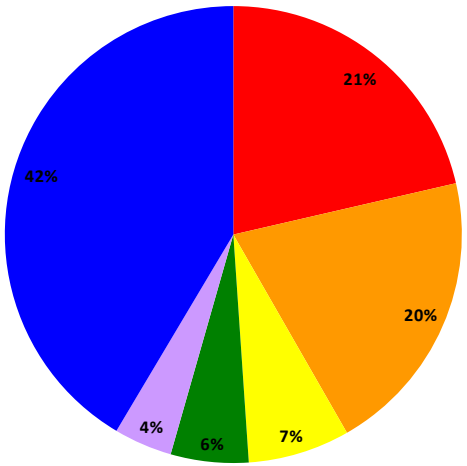


2015 ENC41 NWM age-adjusted rate is 26% higher than 2015 ENC41 WM age-adjusted rate

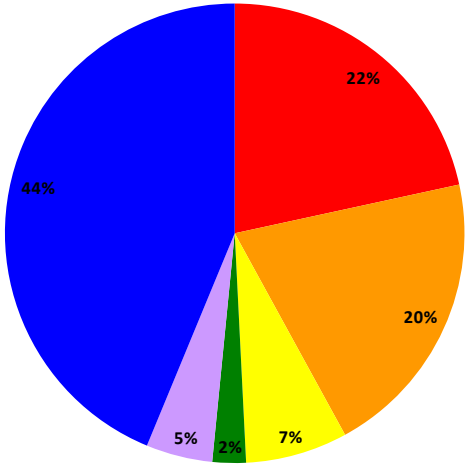
1166 deaths/100,000 **922 deaths/100,000**

- Diseases of Heart
- Cancer - All Sites
- Cerebrovascular Disease
- Chronic Lower Respiratory Diseases
- Diabetes Mellitus
- Unintentional Motor Vehicle Injuries
- Alzheimers Disease
- All Other Unintentional Injuries and Adverse Effects
- All Other Deaths

Non-White Females



White Females

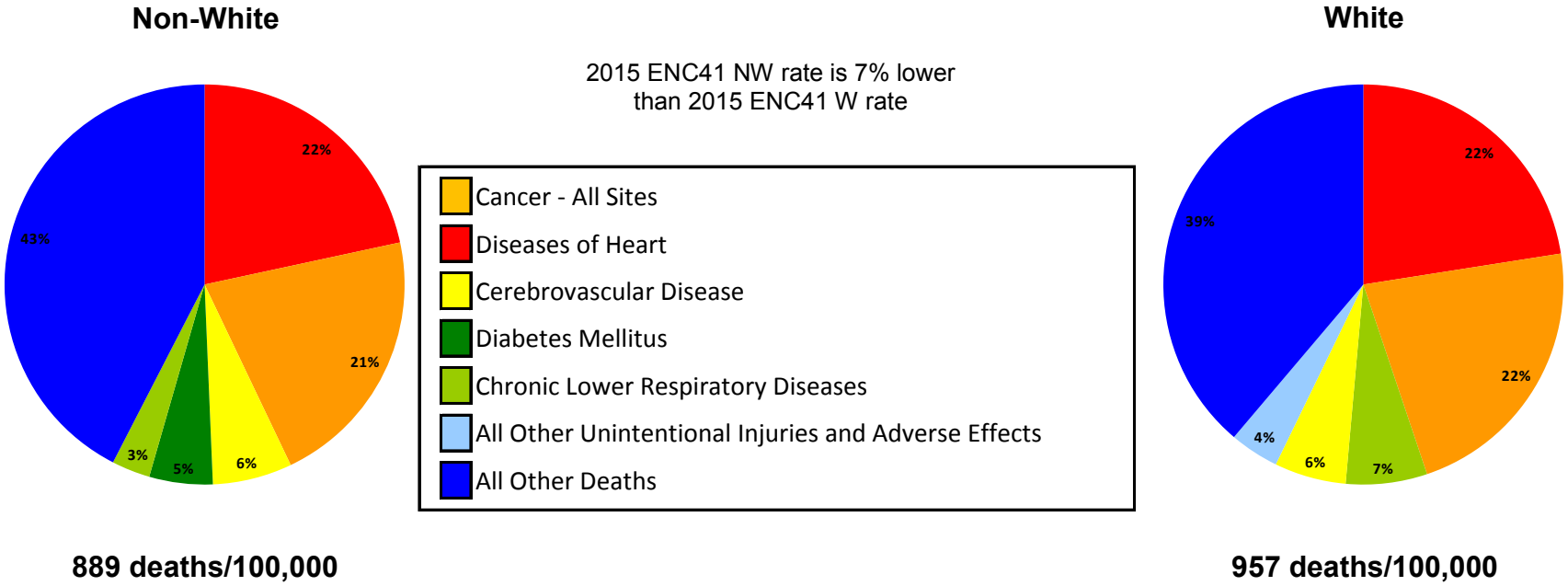


2015 ENC41 NWF age-adjusted rate is 11% higher than 2015 ENC41 WF age-adjusted rate

743 deaths/100,000 **671 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 (2015) by race.
Mortality rate per 100,000 population.



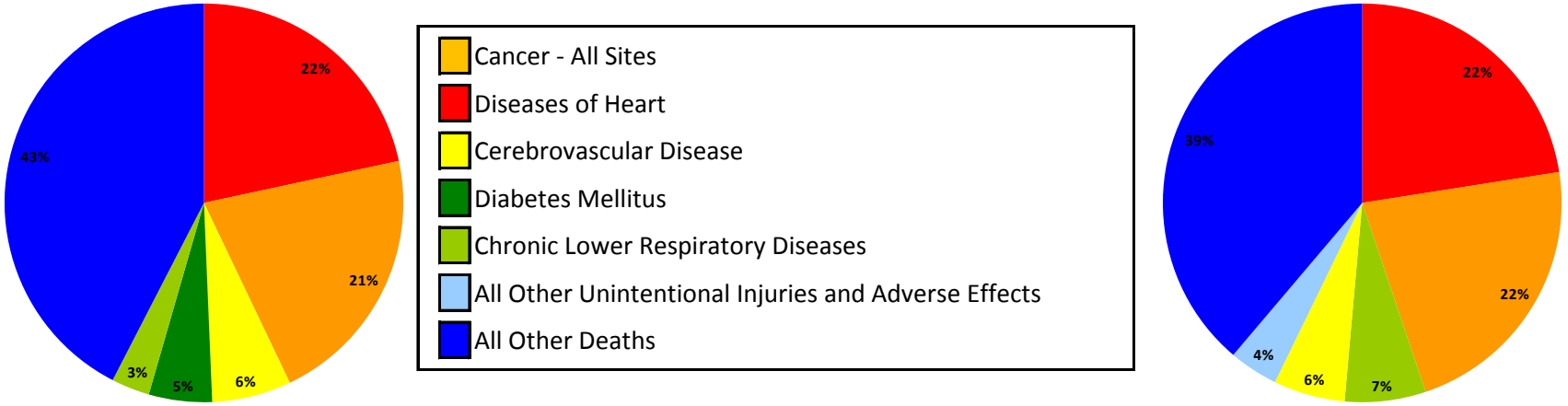
Slices without percentages constitute less than 5% of the deaths within that chart.

Figure 4.3 ii. General leading causes of death for ENC41 (2015) by race. Age-adjusted mortality rate per 100,000 population.

Non-White

White

2015 ENC41 NW age-adjusted rate is 17% higher than 2015 ENC41 W age-adjusted rate



919 deaths/100,000

787 deaths/100,000

Slices without percentages constitute less than 5% of the deaths within that chart.

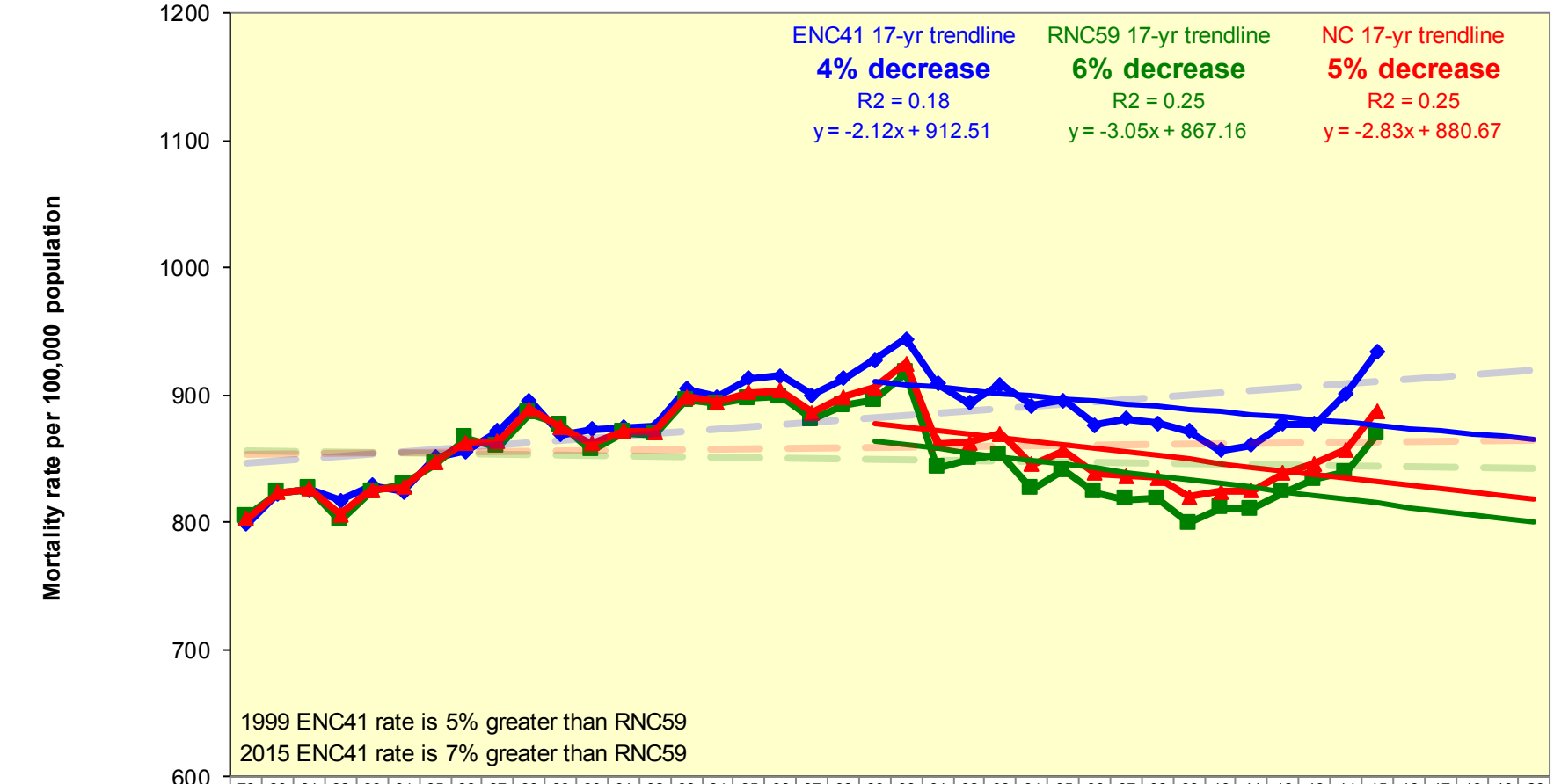
5. Trends and Disparities in Mortality in ENC41: All Causes of Death and All Causes of Premature Mortality; 1979-2015

All Causes of Death

- ENC's all-cause mortality rate shows an increase for the last two years, but the 17-year trend is decreasing. ENC's rate is not decreasing as quickly as NC and RNC, creating an increase in regional disparity.
- The age-adjusted, all-cause mortality rate for ENC is decreasing over the 37-year period. Over the 17-year period, the trend shows greater decrease, and suggests the ENC rate will converge with the RNC and NC rates. ENC's fitted rate continues to remain 7% greater than the rate for RNC for 2015.
- The non-White male mortality rate remains higher than the other demographic groups but has had the greatest rate of decrease (31%) in the 17-year trend. Convergence of the non-White male rate with the White male rate is suggested in the future.
- The trends for all-cause mortality rates for both non-Whites and Whites are decreasing. The non-White rate is 13% greater than the White rate, but the recent 17-year trend suggests they will converge.
- Over the recent 17-year period there is a 54% decrease in racial disparity, in a reliable trend.

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 i. All Causes of Death: Trends in mortality rates for ENC41, RNC59, and NC 1979-2015 with projections to 2020

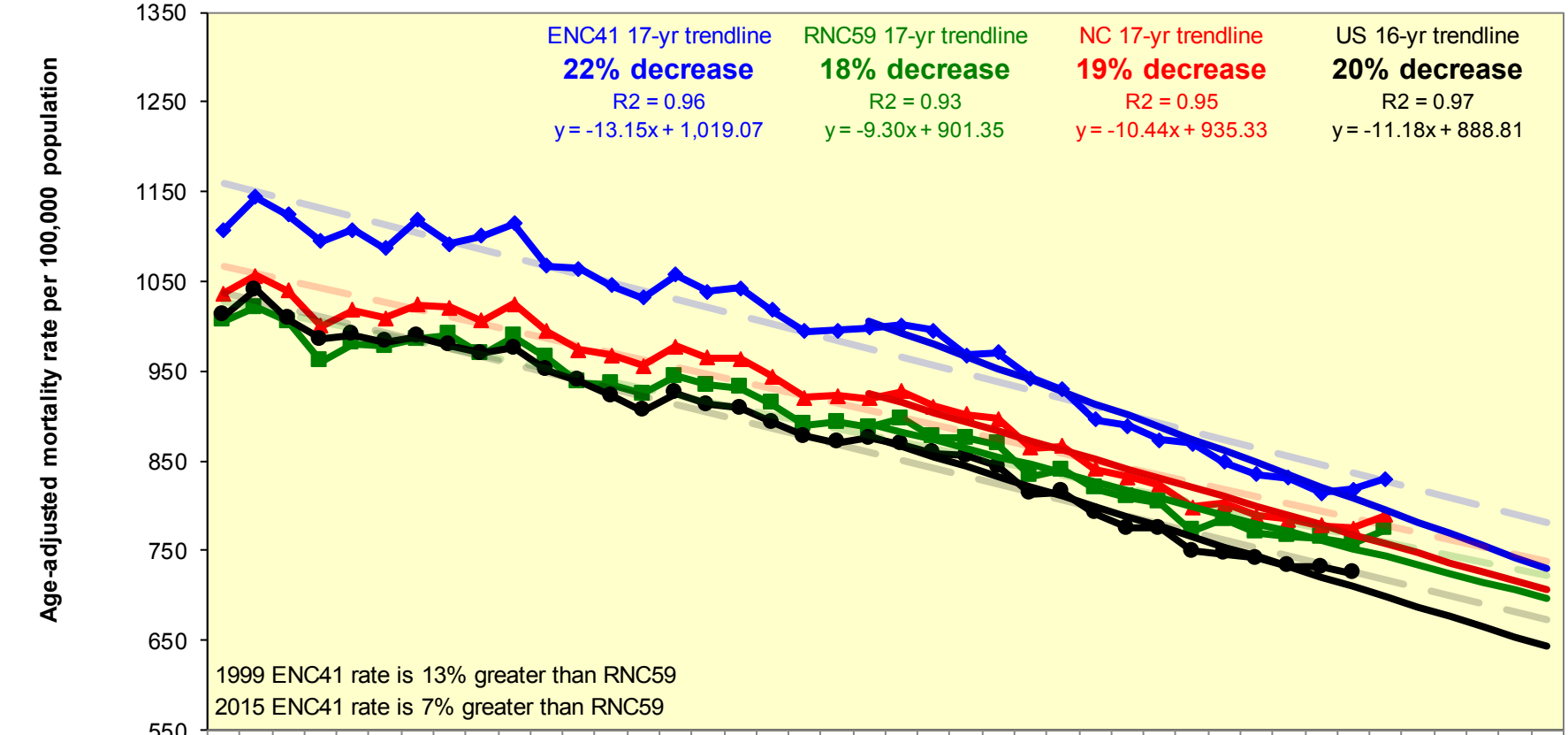


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	799	823	826	817	829	824	851	856	872	896	869	873	874	875	905	899	913	916	900	914	928	944	909	894	909	892	896	876	882	878	872	857	861	877	877	901	934					
RNC59	805	824	827	802	824	830	846	867	860	886	877	857	871	869	896	893	897	899	881	892	896	917	843	850	853	826	841	824	818	819	800	811	811	823	834	840	869					
NC	803	824	826	807	826	828	848	863	864	889	874	862	872	871	899	895	902	904	887	899	905	925	862	863	870	845	857	839	837	836	820	824	825	839	846	857	888					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	5% LT	3% LT	ENC41
5% GT		2% GT	RNC59
4% GT	2% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	7% LT	5% LT	ENC41
7% GT		2% GT	RNC59
5% GT	2% LT		NC

Figure 5.1 ii. All Causes of Death: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

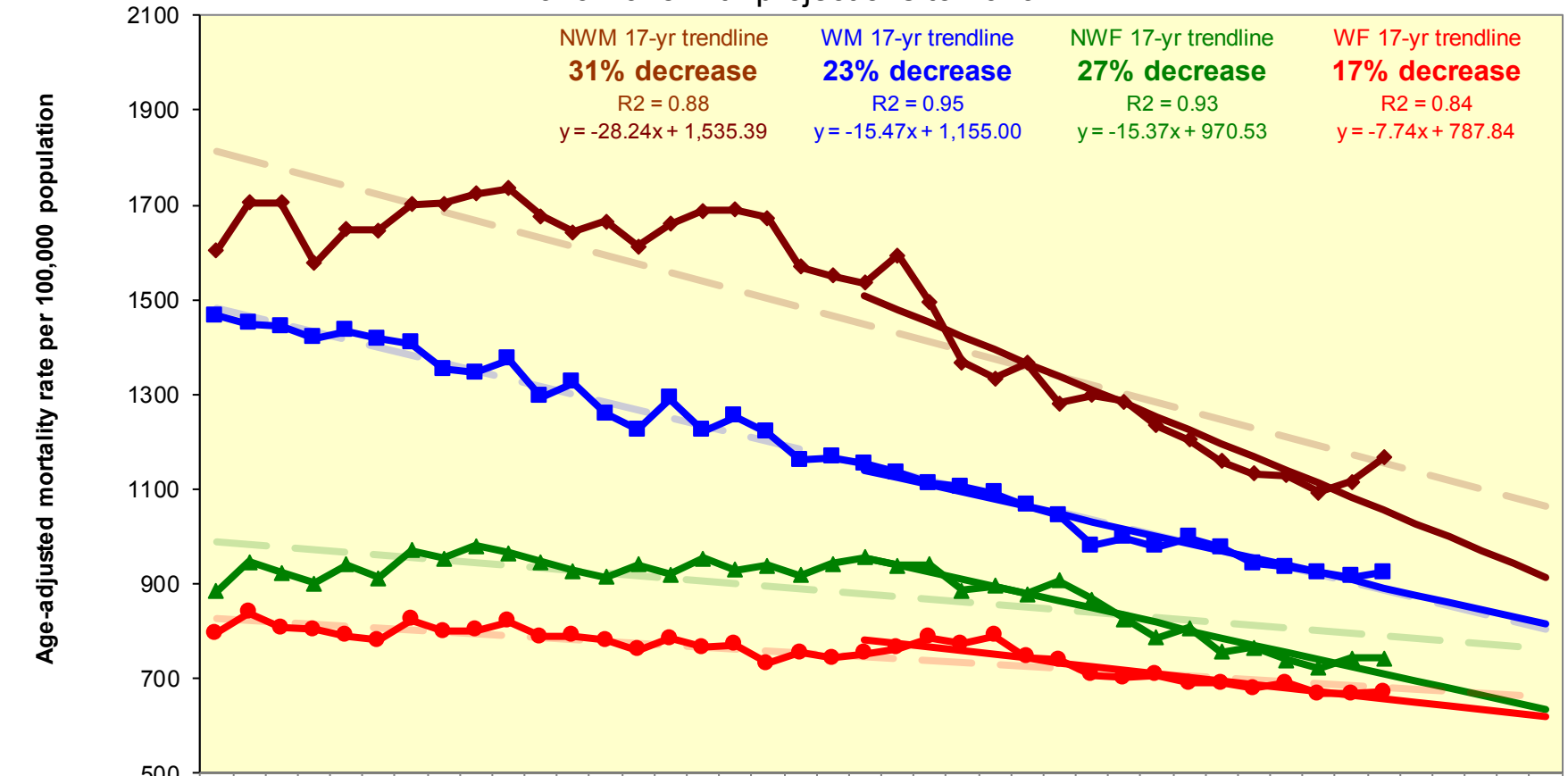


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	1108	1144	1124	1095	1107	1087	1119	1092	1101	1115	1067	1064	1046	1032	1058	1039	1043	1018	995	995	998	1002	995	968	971	942	930	896	889	873	869	849	836	832	814	819	830					
RNC59	1007	1022	1005	961	981	977	986	991	969	989	965	937	936	925	945	935	932	914	890	893	888	897	877	876	868	833	841	819	809	804	772	785	770	766	764	758	774					
NC	1037	1057	1040	1000	1018	1010	1024	1021	1007	1025	994	974	968	956	977	965	964	944	921	923	920	927	911	902	898	864	866	841	832	824	799	803	789	785	778	775	790					
US	1012	1040	1008	986	991	983	988	979	970	976	951	939	923	906	926	913	909	894	878	870	875	869	859	856	844	814	815	792	775	775	749	747	741	733	732	725						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	12% LT	8% LT	13% LT	ENC41
13% GT		4% GT	1% LT	RNC59
9% GT	4% LT		5% LT	NC
15% GT	1% GT	5% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	7% LT	5% LT	12% LT	ENC41
7% GT		2% GT	6% LT	RNC59
5% GT	2% LT		8% LT	NC
14% GT	6% GT	8% GT		US

Figure 5.1 iii. All Causes of Death: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

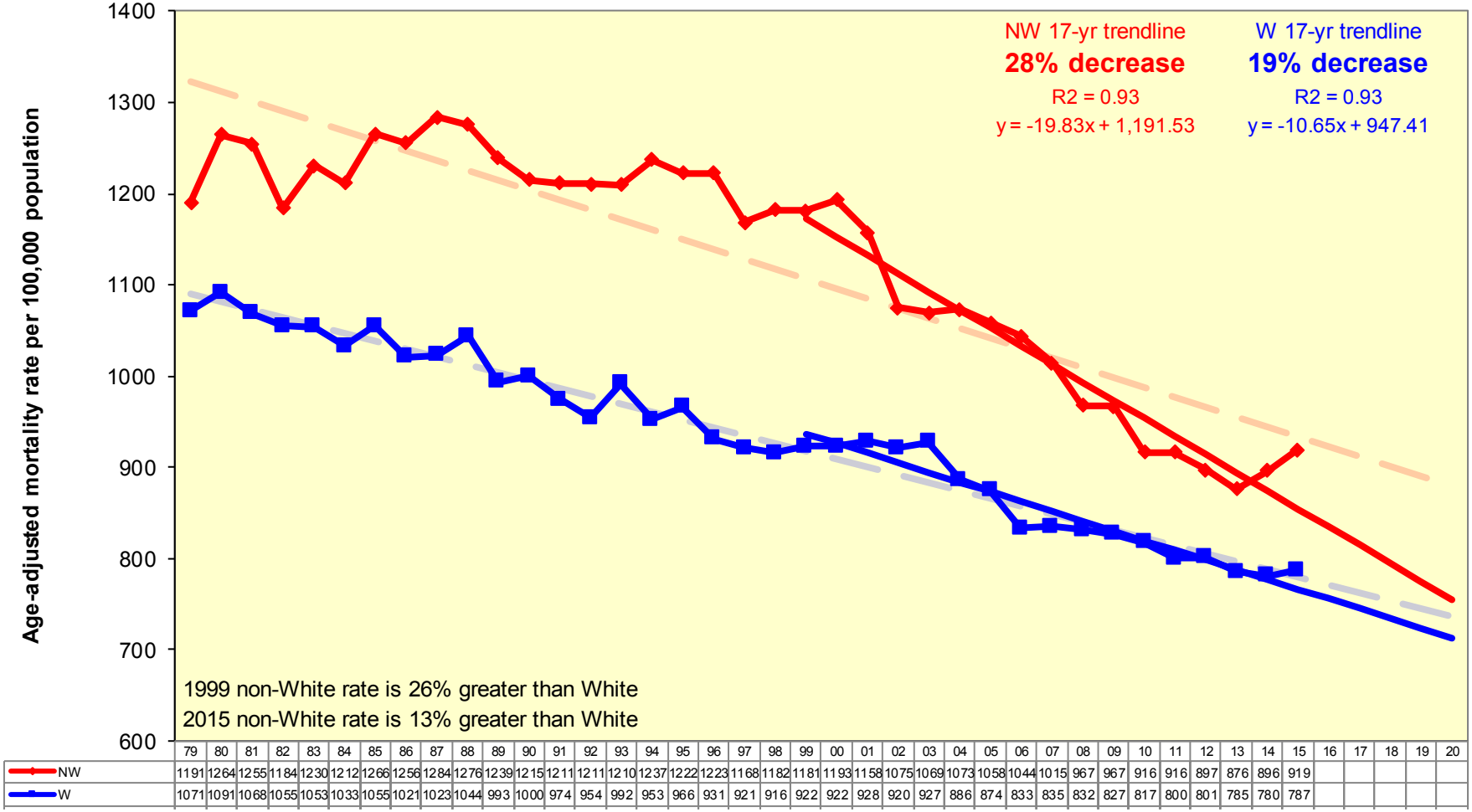


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	1602	1705	1705	1577	1648	1647	1700	1703	1723	1735	1677	1643	1665	1612	1659	1687	1689	1673	1570	1550	1535	1593	1493	1367	1333	1365	1280	1298	1285	1233	1204	1158	1133	1128	1093	1116	1166					
WM	1466	1449	1444	1419	1434	1417	1407	1353	1345	1374	1294	1324	1258	1224	1290	1222	1253	1218	1160	1166	1153	1134	1112	1104	1091	1064	1044	980	997	978	997	977	943	935	924	914	922					
NWF	884	945	924	901	941	913	971	954	980	964	945	927	913	940	919	953	929	939	917	942	955	938	941	885	894	877	905	867	825	786	807	756	766	739	722	743	743					
WF	795	838	806	802	790	781	824	799	801	820	787	789	780	760	784	765	771	731	754	742	752	763	785	773	790	743	738	706	700	707	689	689	679	689	667	667	671					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	25% LT	37% LT	49% LT	NWM
33% GT		16% LT	32% LT	WM
58% GT	19% GT		19% LT	NWF
95% GT	47% GT	23% GT		WF

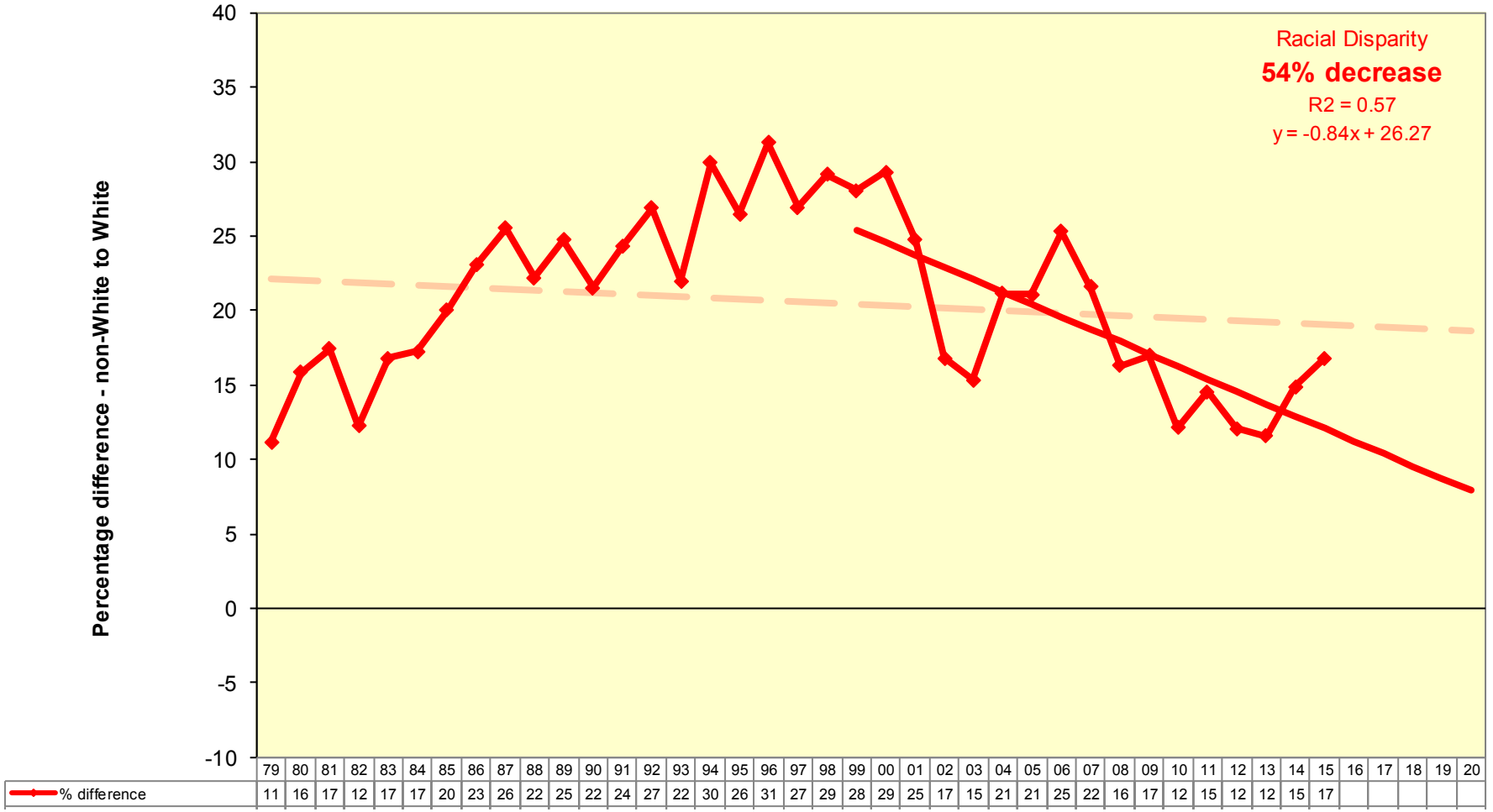
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	16% LT	33% LT	39% LT	NWM
19% GT		20% LT	27% LT	WM
50% GT	25% GT		8% LT	NWF
63% GT	37% GT	9% GT		WF

Figure 5.1 iv. All Causes of Death: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	1191	1264	1255	1184	1230	1212	1266	1256	1284	1276	1239	1215	1211	1211	1210	1237	1222	1223	1168	1182	1181	1193	1158	1075	1069	1073	1058	1044	1015	967	967	916	916	897	876	896	919					
W	1071	1091	1068	1055	1053	1033	1055	1021	1023	1044	993	1000	974	954	992	953	966	931	921	916	922	922	928	920	927	886	874	833	835	832	827	817	800	801	785	780	787					

Figure 5.1 v. All Causes of Death:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020

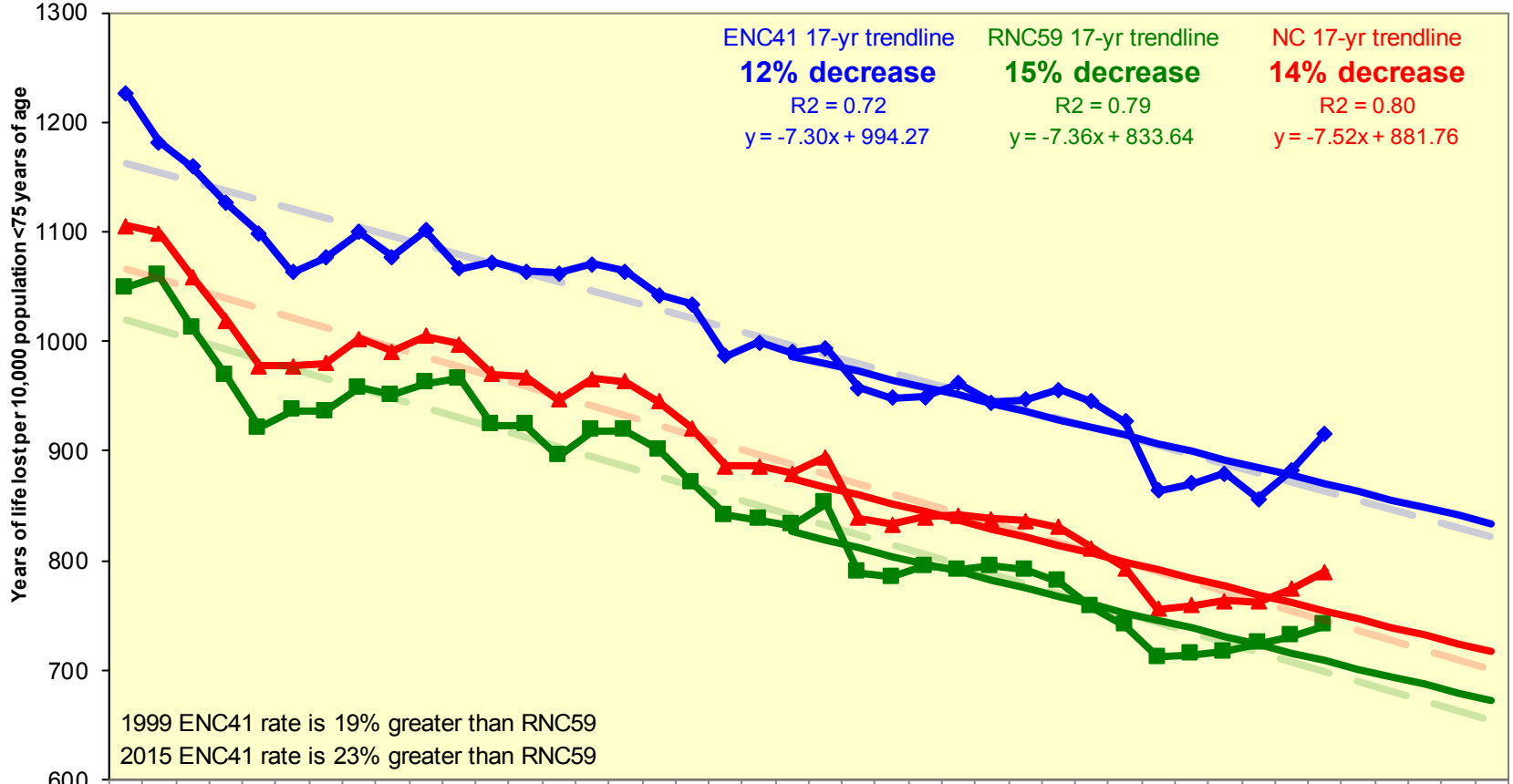


All Causes of Premature Mortality

- ENC's premature mortality rate has ticked up in the last 2 years, but the 17-year trend shows a 12% decrease since 1999. RNC's trend has decreased 15%, and NC's had decreased 14%.
- The age-adjusted premature mortality trend for the 17-year period is also decreasing, but remains 24% higher than the RNC rate in 2015.
- The non-White male rate is significantly higher than the rates for any other demographic group, but also has the highest rate of decrease (slope of trend). White females have the lowest rate and also the lowest rate of decrease.
- The non-White rate remains 38% greater than the White rate.
- A recent decrease in the premature mortality rate trend for non-Whites and leveling of the rates for Whites suggests a reduction in racial disparity

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, 1979-2015 with projections to 2020

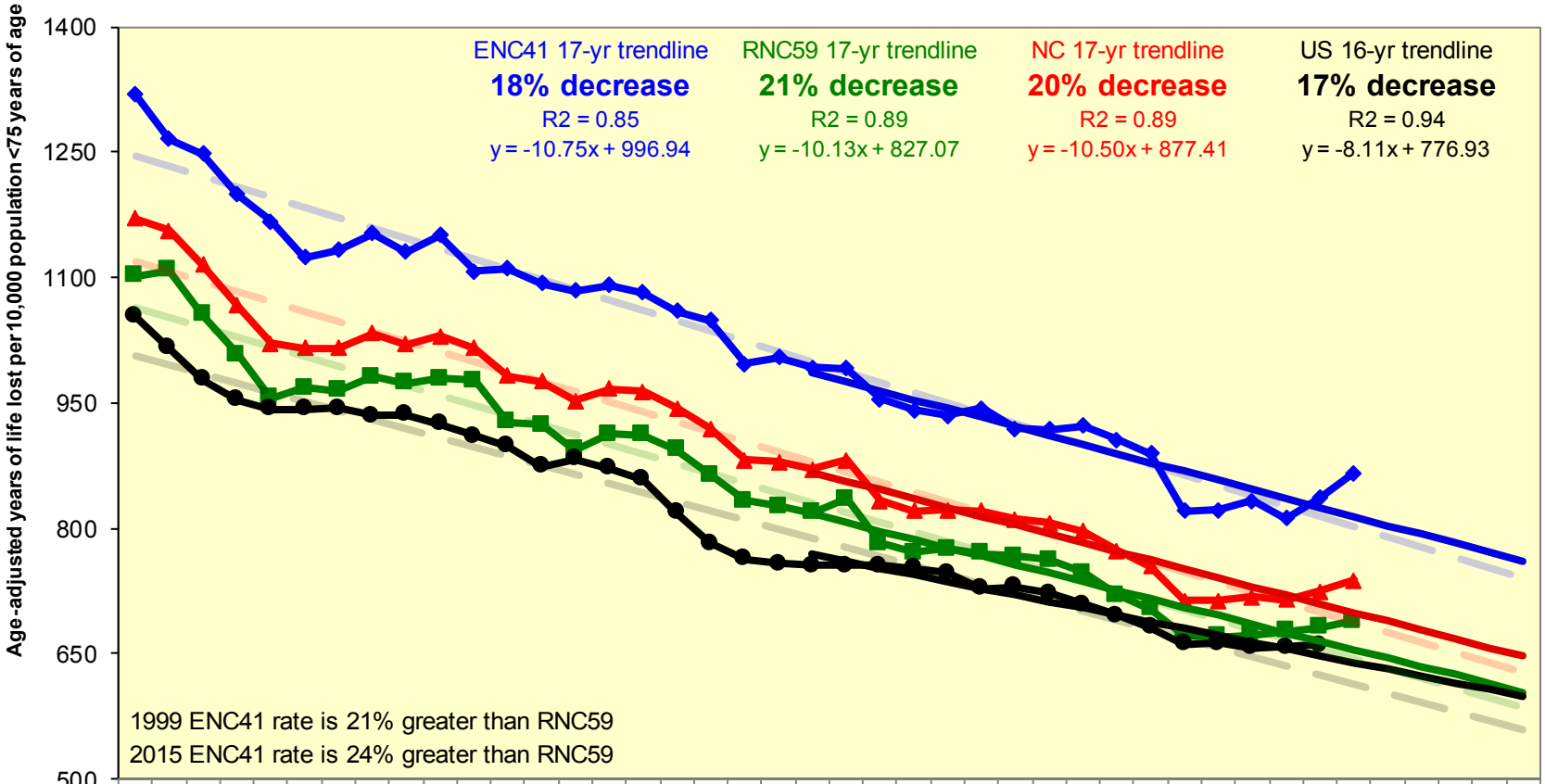


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	1227	1182	1159	1126	1099	1063	1076	1099	1077	1101	1066	1072	1064	1062	1071	1064	1042	1034	986	999	990	994	957	948	949	962	945	946	955	945	927	864	870	879	856	882	916					
RNC59	1049	1059	1012	969	921	937	936	957	951	961	966	923	924	895	918	918	901	871	841	837	832	852	789	784	794	792	795	792	780	758	740	712	714	717	724	731	741					
NC	1106	1098	1059	1019	978	977	980	1002	991	1005	997	970	967	947	966	963	945	921	886	886	880	895	838	833	840	842	838	836	830	811	793	756	759	763	762	774	790					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	16% LT	11% LT	ENC41
19% GT		6% GT	RNC59
13% GT	5% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	18% LT	13% LT	ENC41
23% GT		6% GT	RNC59
15% GT	6% LT		NC

Figure 5.2 ii. All Causes of Premature Mortality: Trends in age-adjusted premature mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

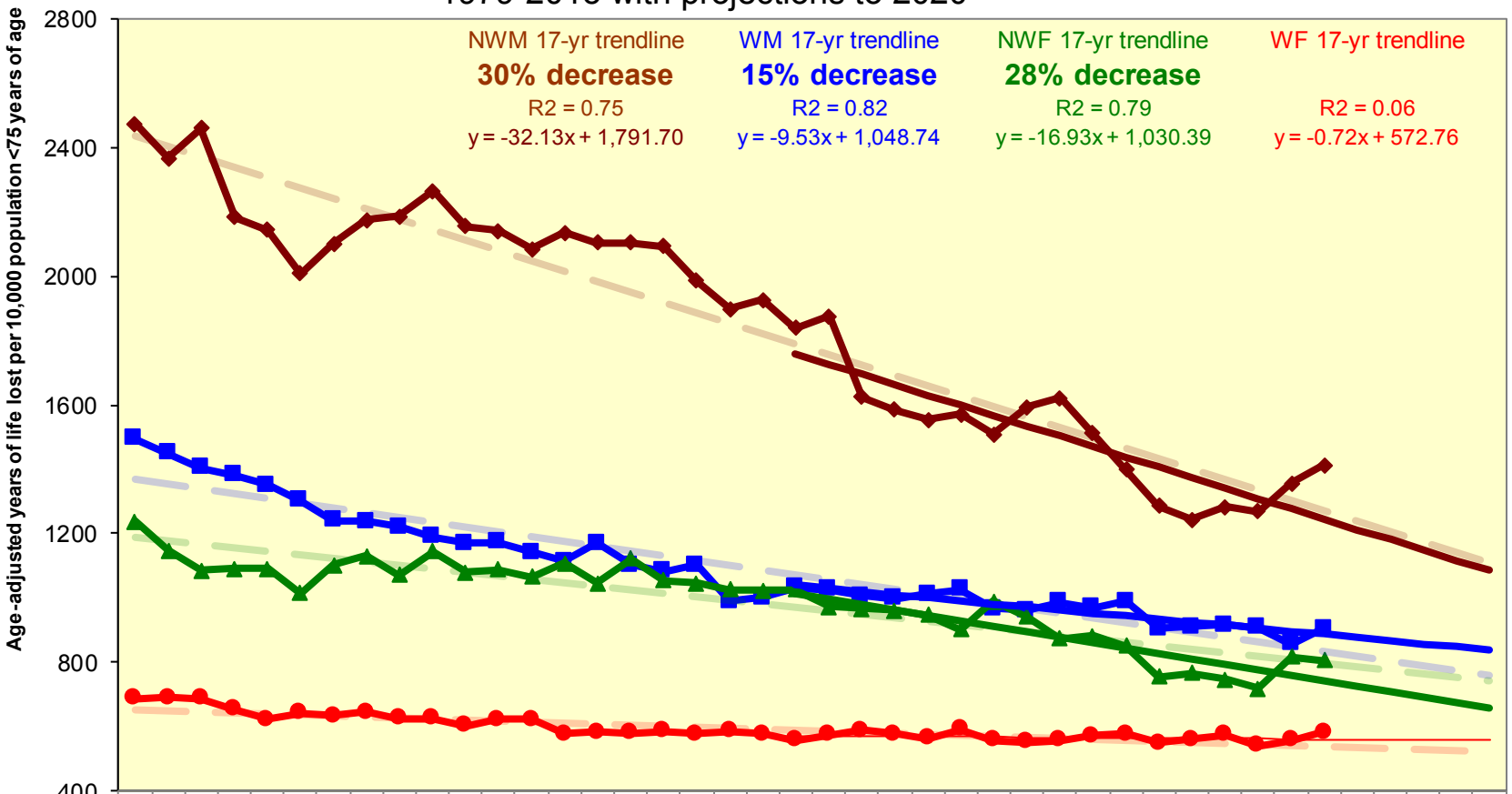


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	1319	1266	1249	1200	1167	1124	1133	1153	1131	1151	1107	1111	1093	1085	1091	1082	1060	1048	997	1005	992	991	955	942	935	944	919	918	923	906	889	821	821	833	812	836	866					
RNC59	1102	1109	1056	1008	955	968	965	981	973	979	977	927	924	894	912	912	894	864	833	827	819	836	782	771	775	769	767	762	746	720	703	671	670	672	677	681	689					
NC	1170	1157	1115	1067	1021	1016	1016	1034	1021	1030	1016	983	976	953	967	963	944	920	882	880	871	882	833	821	822	820	811	806	796	773	755	714	713	717	715	724	738					
US	1053	1016	977	954	943	943	944	935	936	925	910	898	874	882	872	858	818	782	763	758	755	755	755	752	747	728	730	722	709	696	681	662	662	657	658	661						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	17% LT	12% LT	22% LT	ENC41
21% GT		6% GT	6% LT	RNC59
14% GT	6% LT		11% LT	NC
28% GT	6% GT	13% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	19% LT	14% LT	22% LT	ENC41
24% GT		7% GT	3% LT	RNC59
16% GT	6% LT		9% LT	NC
27% GT	3% LT	10% GT		US

Figure 5.2 iii. All Causes of Premature Mortality: Trends in age-adjusted premature mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

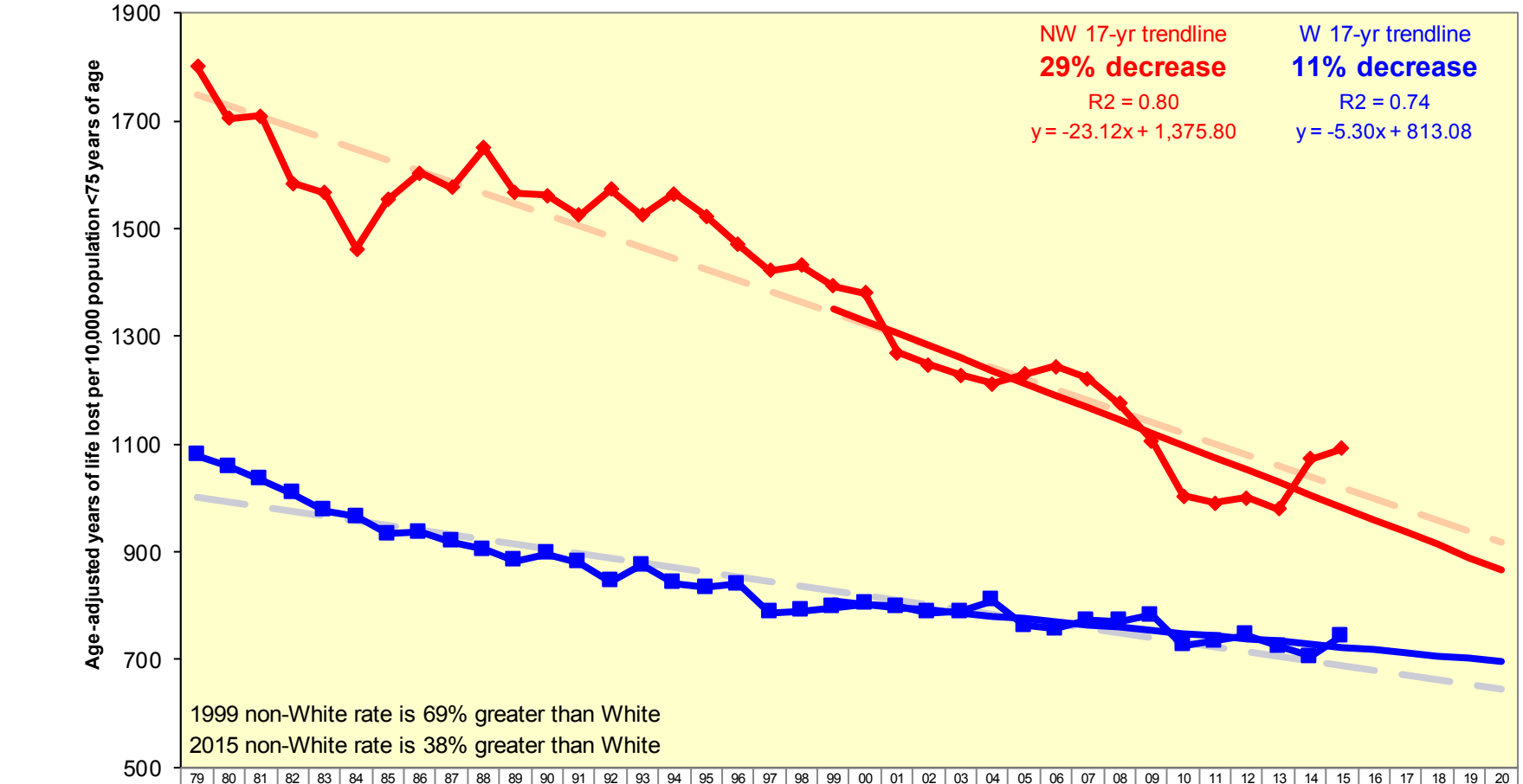


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	2474	2367	2461	2184	2145	2010	2102	2176	2187	2266	2155	2142	2086	2136	2106	2104	2094	1986	1899	1926	1841	1877	1625	1586	1554	1571	1510	1593	1621	1513	1400	1287	1245	1283	1268	1356	1414					
WM	1496	1451	1405	1383	1352	1304	1241	1239	1221	1191	1170	1173	1143	1114	1171	1101	1081	1103	990	1000	1031	1026	1005	997	1011	1025	967	962	987	969	990	904	911	916	907	857	905					
NWF	1239	1148	1085	1092	1091	1015	1103	1132	1073	1145	1080	1088	1066	1107	1045	1123	1054	1047	1026	1024	1027	972	967	960	948	902	989	943	874	883	851	754	767	746	719	818	806					
WF	686	690	686	653	623	642	635	646	625	626	603	622	622	578	581	579	587	576	584	578	556	574	587	576	564	592	559	551	558	571	577	549	559	573	541	557	583					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	41% LT	42% LT	68% LT	NWM
71% GT		2% LT	45% LT	WM
74% GT	2% GT		44% LT	NWF
213% GT	83% GT	80% GT		WF

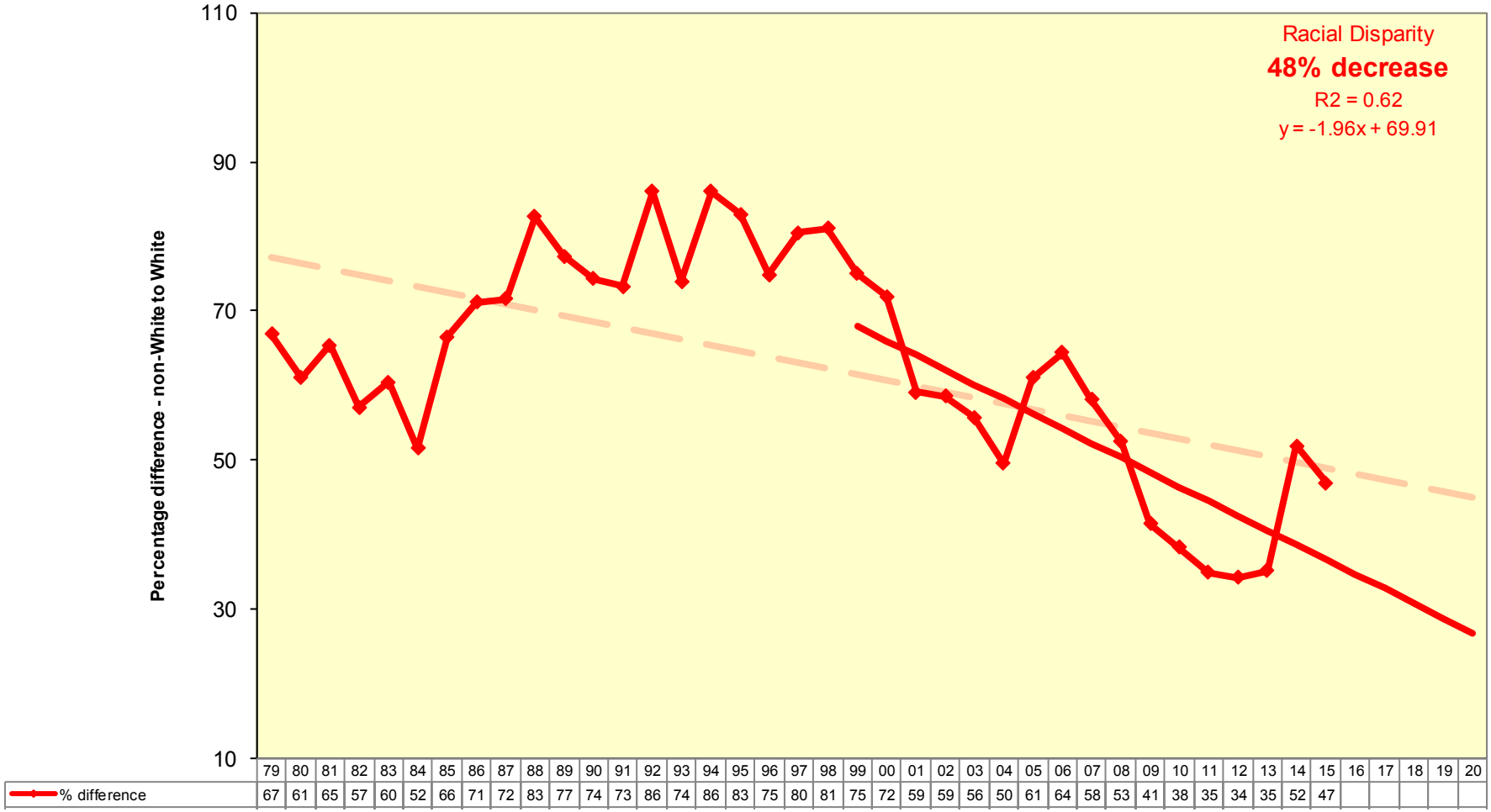
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	30% LT	41% LT	56% LT	NWM
43% GT		15% LT	37% LT	WM
68% GT	18% GT		26% LT	NWF
128% GT	60% GT	35% GT		WF

Figure 5.2 iv. All Causes of Premature Mortality: Trends in age-adjusted premature mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	1802	1705	1710	1585	1566	1463	1554	1603	1576	1651	1567	1563	1525	1573	1524	1565	1524	1470	1422	1432	1394	1380	1270	1248	1228	1212	1229	1244	1223	1176	1106	1005	992	1000	979	1073	1092					
W	1080	1059	1034	1009	976	965	933	937	918	904	884	896	880	845	876	841	833	841	788	791	796	803	798	787	789	811	763	757	773	771	782	727	735	745	725	706	744					

Figure 5.2 v. All Causes of Premature Mortality: Measuring disparity in age-adjusted premature mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	67	61	65	57	60	52	66	71	72	83	77	74	73	86	74	86	83	75	80	81	75	72	59	59	56	50	61	64	58	53	41	38	35	34	35	52	47					

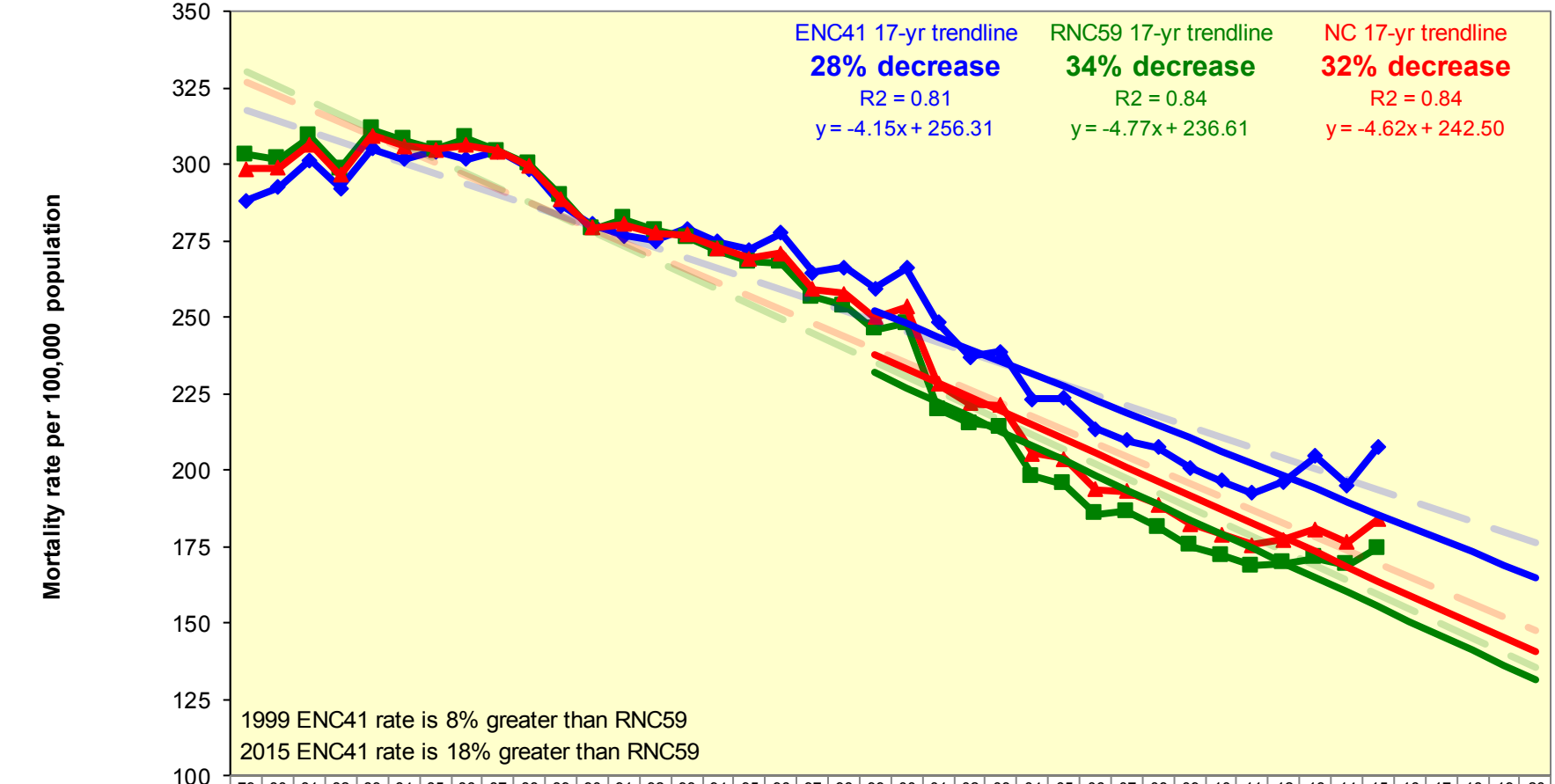
6. Trends and Disparities in Mortality in ENC41: Ten Specific Leading Causes of Death, 1979-2015

Diseases of Heart

- ENC's heart disease mortality rate trend is decreasing but not as quickly as the decrease for RNC and NC, resulting in an increased geographic disparity. In 1999, the fitted rate for ENC was 8% greater than RNC; by 2015 it was 18% greater than RNC.
- While ENC's age-adjusted mortality rate is decreasing at a pace equal to RNC, the ENC fitted rate remains 19% greater than RNC in 2015.
- The non-White male rate remains the highest but convergence with the White male rate is suggested in the future. The non-White female rate remains slightly higher than the White female rate but is decreasing more quickly and is suggested to fall below White females in the future.
- While the non-White rate remains 10% greater than the rate for Whites, the 17-year trends for both are decreasing, and convergence is suggested in the future.
- While the 37-year trend suggests an increase in racial disparity, the moderately reliable 17-year trend line for racial disparity suggests a 35% 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 6.1 i. Diseases of Heart: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

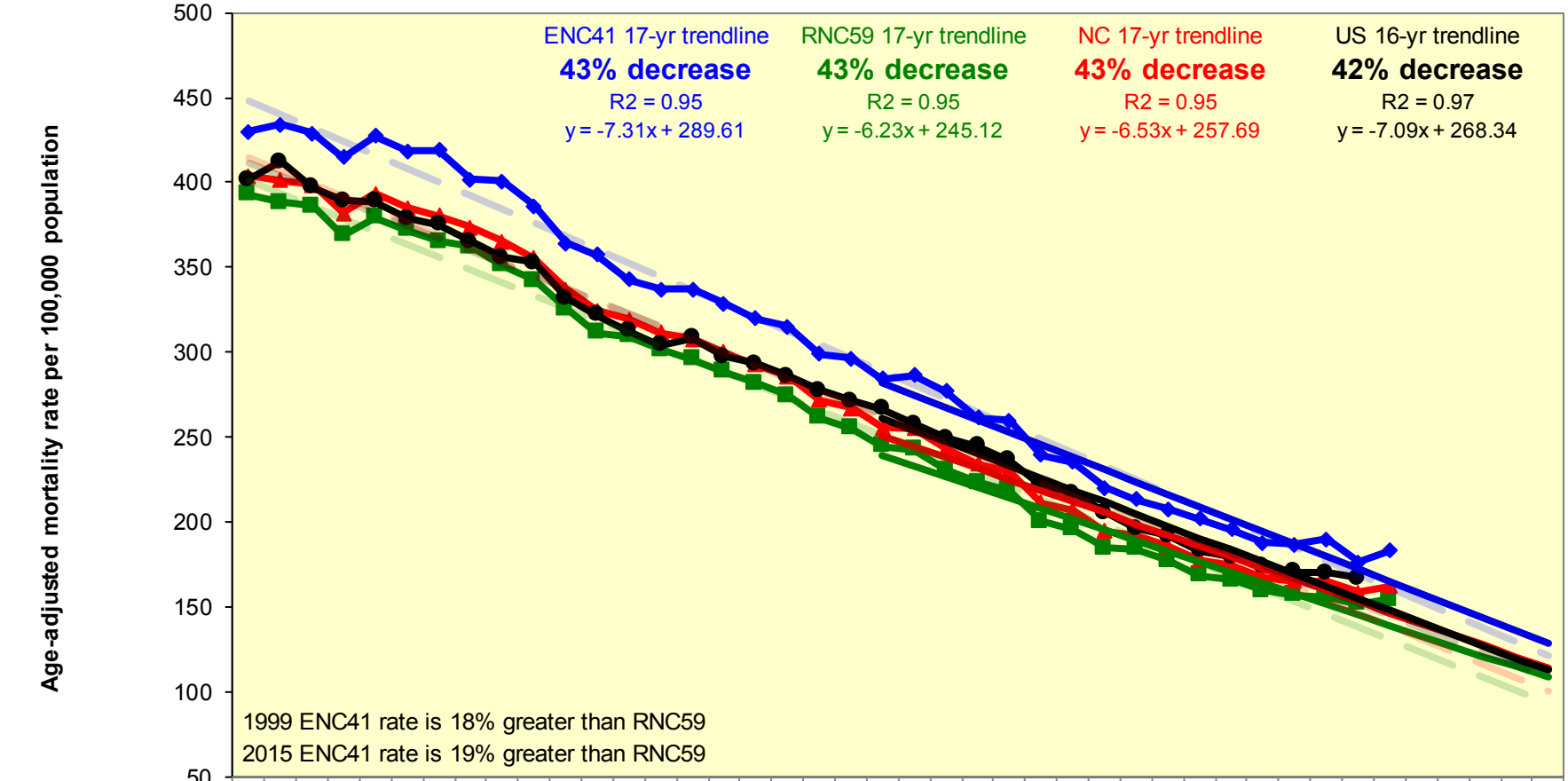


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	288	293	301	292	305	302	305	302	304	299	287	280	277	275	279	275	272	278	265	266	260	266	248	237	239	223	224	214	210	207	201	197	193	196	205	195	208					
RNC59	303	302	309	298	312	308	305	309	304	300	290	279	282	279	276	272	268	268	257	254	246	248	220	215	214	198	196	186	186	181	175	172	169	170	171	169	175					
NC	299	299	307	297	310	306	305	306	304	300	289	279	281	278	277	273	269	271	259	258	250	253	228	222	221	205	204	194	193	189	183	179	176	177	181	177	184					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	8% LT	5% LT	ENC41
8% GT		2% GT	RNC59
6% GT	2% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	16% LT	11% LT	ENC41
18% GT		5% GT	RNC59
13% GT	5% LT		NC

Figure 6.1 ii. Diseases of Heart: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

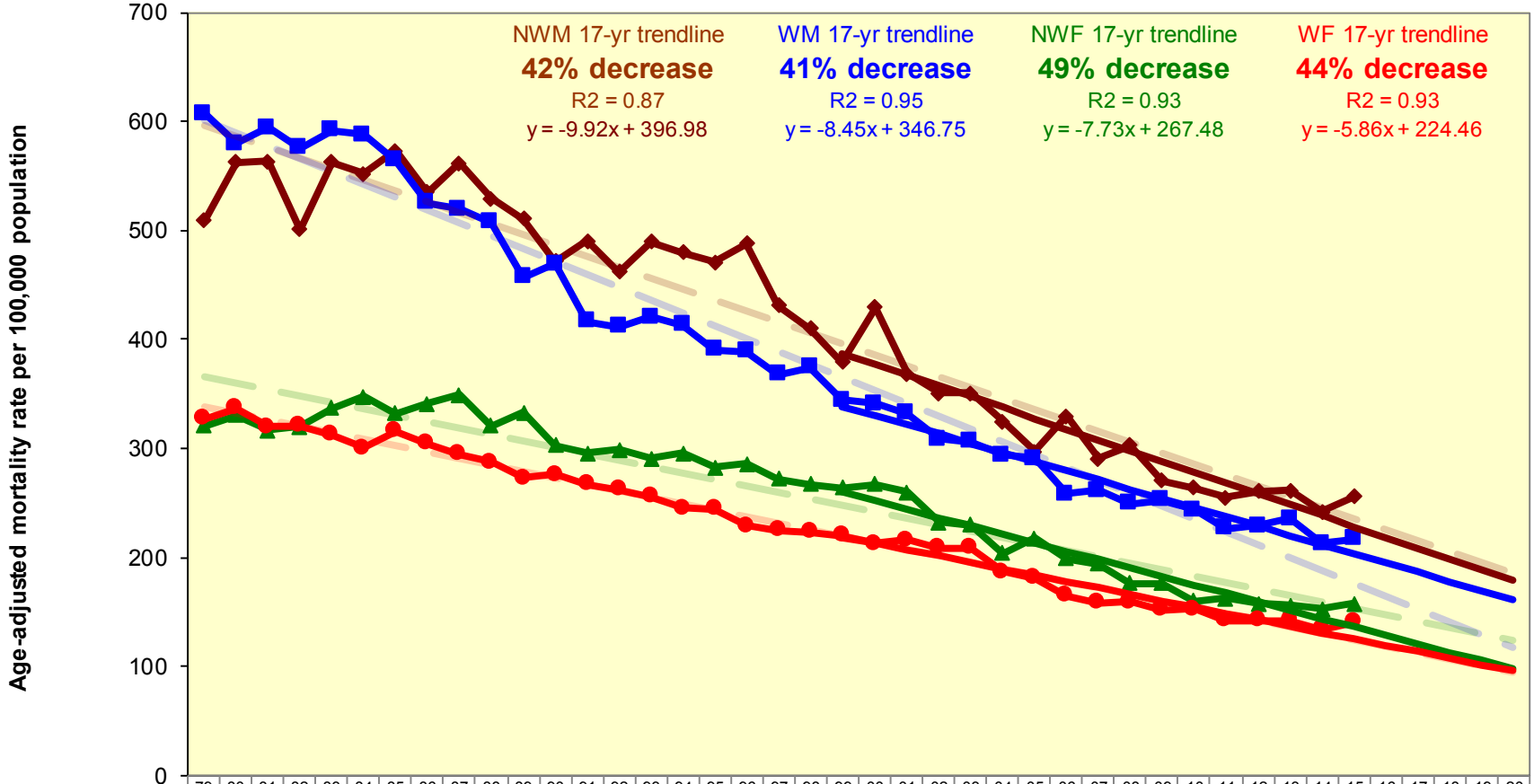


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	430	434	429	415	427	419	419	402	401	386	364	358	343	337	337	329	320	315	299	296	284	286	277	261	260	240	235	220	213	208	202	196	188	187	190	176	183					
RNC59	393	388	386	369	380	372	365	362	351	342	326	312	309	301	296	289	282	274	261	255	244	243	231	223	219	200	196	185	184	177	169	166	160	157	156	152	154					
NC	404	402	399	382	393	385	381	374	365	355	337	325	319	311	308	300	293	286	272	267	256	255	244	234	230	211	207	195	192	186	178	174	168	166	165	158	162					
US	402	412	397	389	389	379	375	365	356	352	332	322	313	304	308	297	293	286	278	271	266	258	250	245	236	222	217	205	196	192	183	179	174	171	170	167						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	15% LT	11% LT	7% LT	ENC41
18% GT		5% GT	9% GT	RNC59
12% GT	5% LT		4% GT	NC
8% GT	9% LT	4% LT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	16% LT	11% LT	10% LT	ENC41
19% GT		5% GT	6% GT	RNC59
13% GT	5% LT		1% GT	NC
11% GT	6% LT	1% LT		US

Figure 6.1 iii. Diseases of Heart: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	509	563	563	501	563	552	573	535	562	530	511	472	490	462	490	480	471	488	431	410	379	429	368	351	351	325	297	330	291	302	270	264	255	260	261	242	256					
WM	608	580	594	575	592	588	565	525	520	507	457	469	417	412	420	413	391	389	368	374	344	341	332	308	306	294	291	258	261	249	253	244	226	229	235	213	217					
NWF	321	330	316	319	337	348	332	341	349	321	333	302	296	299	290	295	282	286	272	267	264	267	260	232	230	204	217	199	194	176	176	160	162	157	156	153	158					
WF	327	337	320	321	313	300	316	305	295	287	273	276	267	262	256	245	245	229	225	223	220	213	216	208	209	186	181	165	158	159	151	153	142	142	142	134	140					

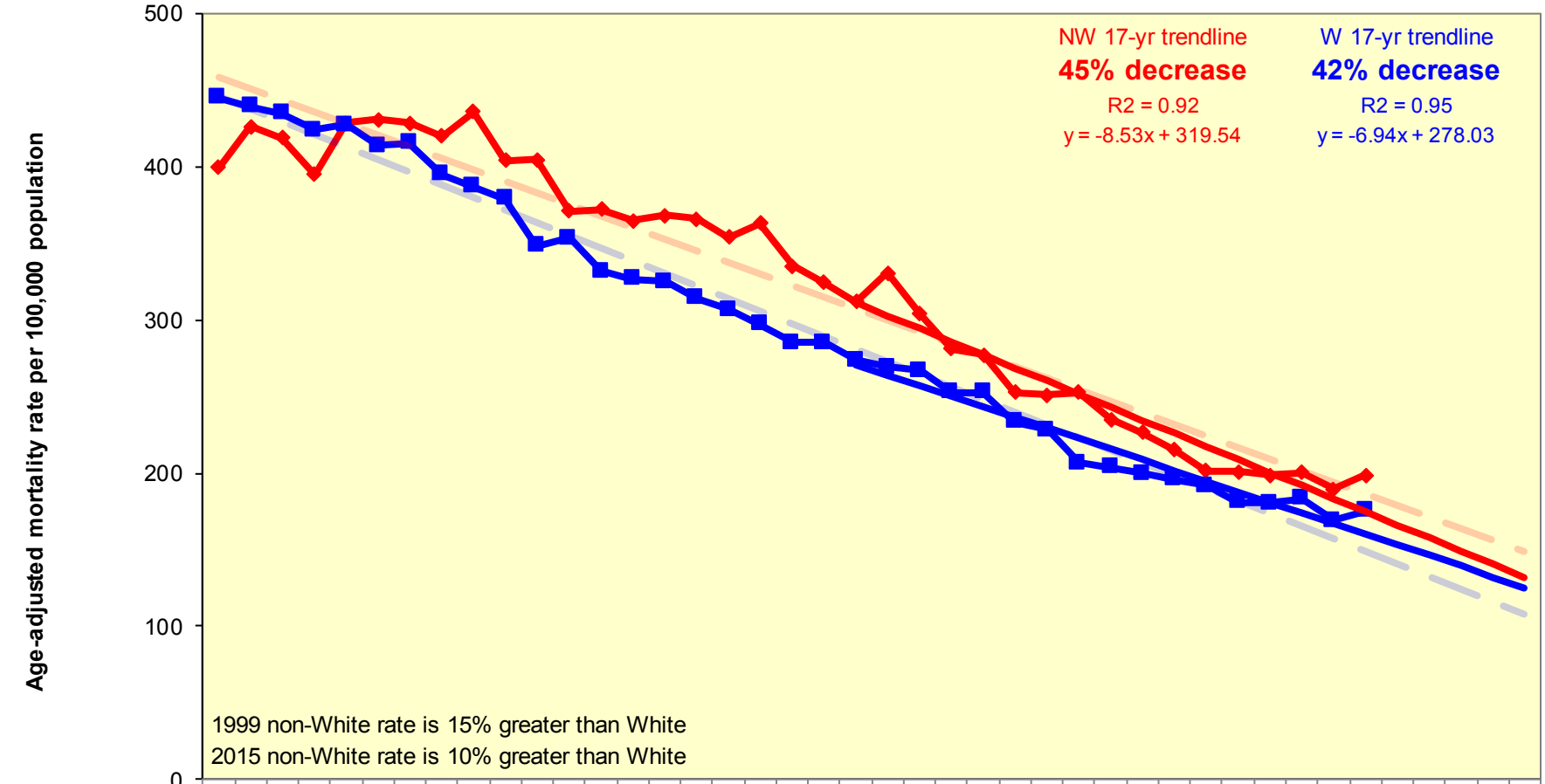
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	13% LT	33% LT	43% LT	NWM
14% GT		23% LT	35% LT	WM
48% GT	30% GT		16% LT	NWF
77% GT	54% GT	19% GT		WF

Comparison of Fitted Rates in 2015

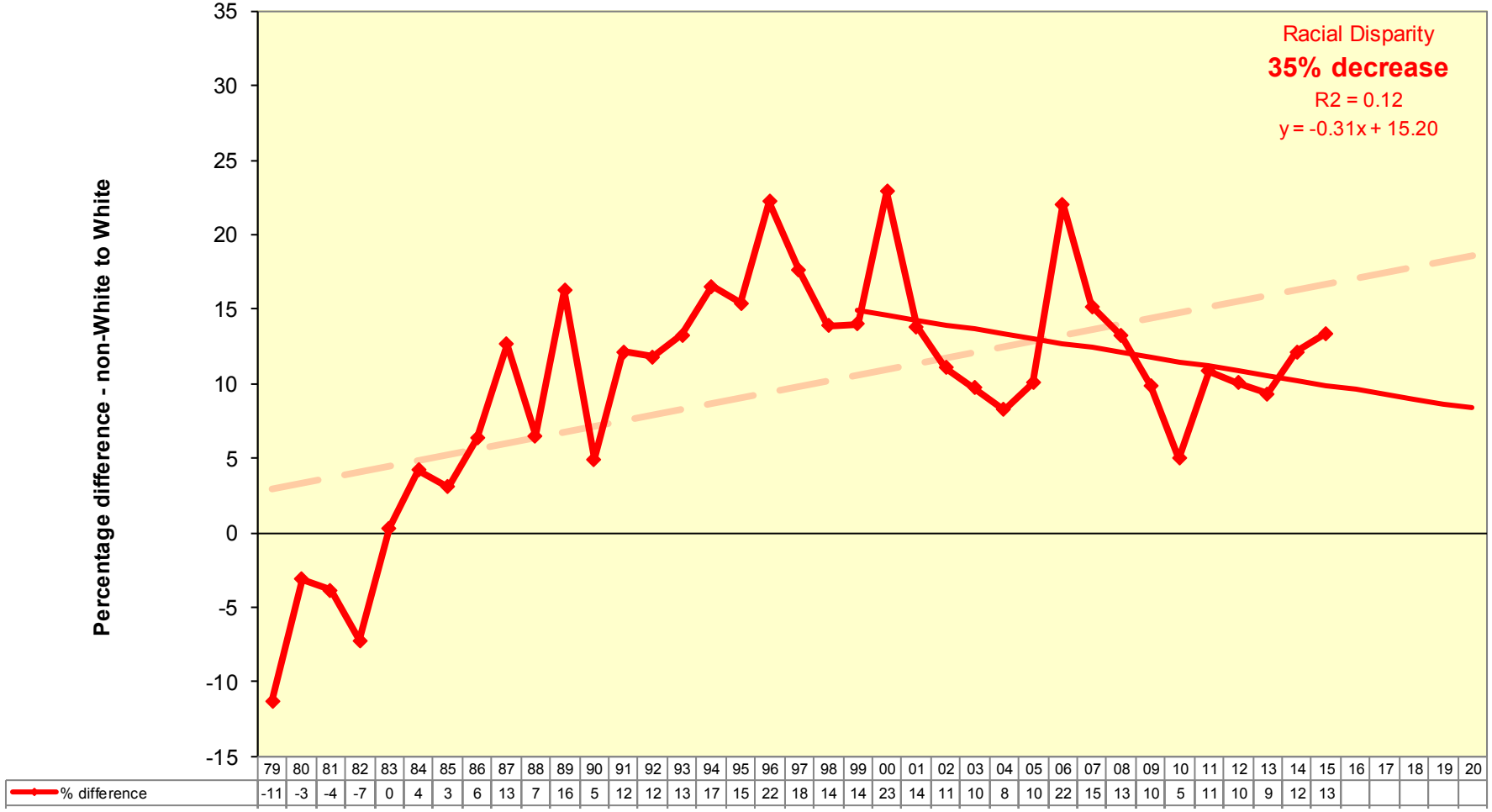
NWM	WM	NWF	WF	
	11% LT	40% LT	45% LT	NWM
13% GT		32% LT	38% LT	WM
66% GT	47% GT		9% LT	NWF
82% GT	62% GT	10% GT		WF

Figure 6.1 iv. Diseases of Heart: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	400	426	419	395	429	431	428	420	436	404	405	371	372	365	368	366	354	363	335	324	312	331	304	281	277	253	251	252	235	226	215	201	201	199	201	190	199					
W	445	439	435	424	427	414	416	395	387	379	348	353	332	326	325	314	307	297	285	285	274	269	267	253	253	233	228	207	204	200	196	192	181	181	183	169	175					

Figure 6.1 v. Diseases of Heart:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020

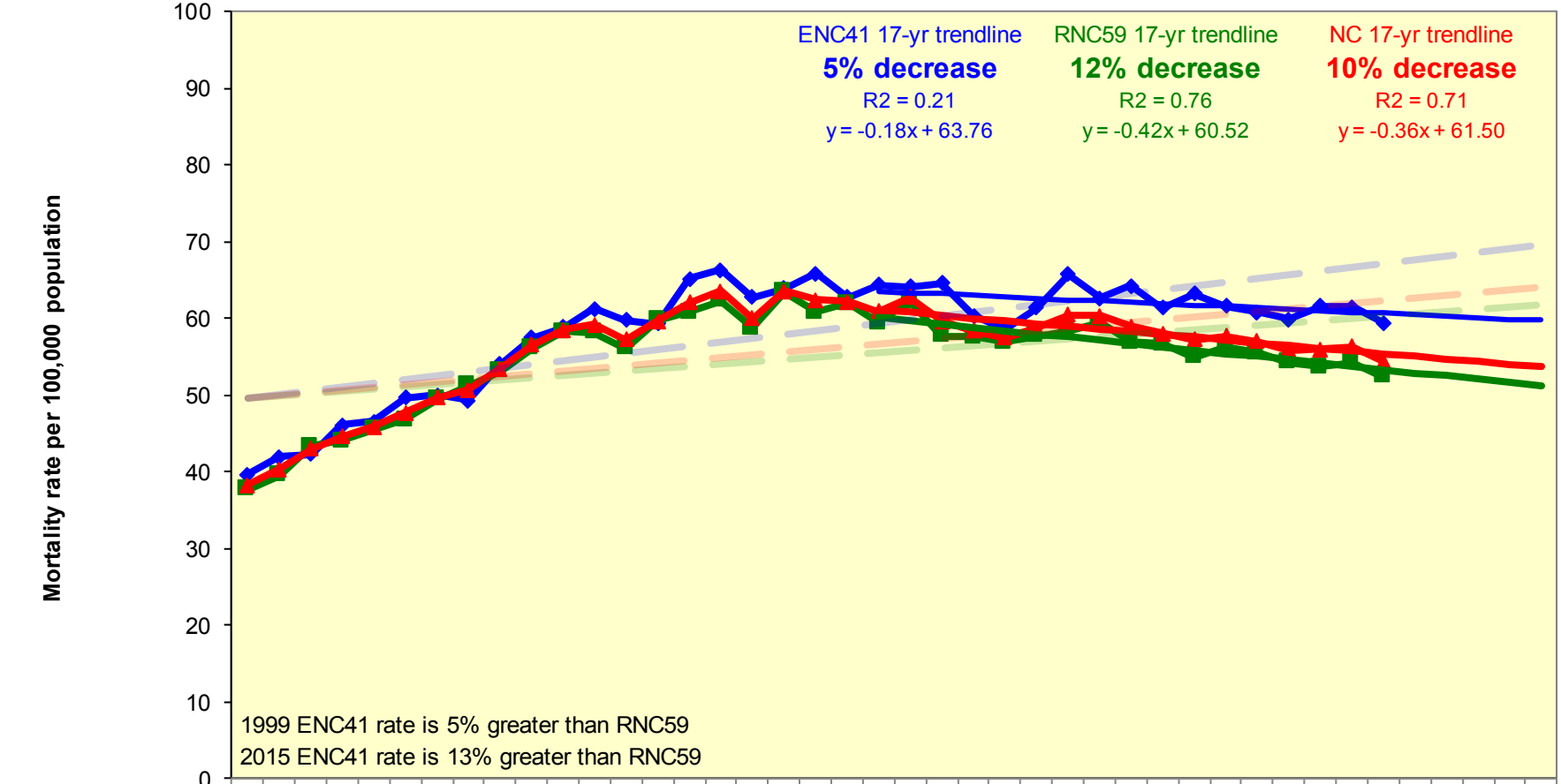


Cancer - Trachea, Bronchus, Lung

- While the 37-year trends for Cancer—TBL indicate that all mortality rates are continuing to increase, the 17-year trend line suggests a slight decrease in all three regions, although the trend line for ENC is unreliable.
- In 2015, the age-adjusted rate trend for ENC is 10% above the RNC rate and 21% above the US rate. During the period 1999-2015, the ENC rates have decreased at the same rate as NC.
- In 2015 the non-White male rate was the highest, but is decreasing the most quickly and will likely converge with the trend for White males in the next few years. The mortality rate for White females is decreasing. The rate for non-White females is unreliable.
- The non-White mortality rate is consistently lower than the White rate. Both rates are decreasing over the 17 year period, but the non-White rate is decreasing more quickly.
- The 17-year trend for racial disparity shows decrease, but 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. Cancer - Trachea, Bronchus, Lung: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

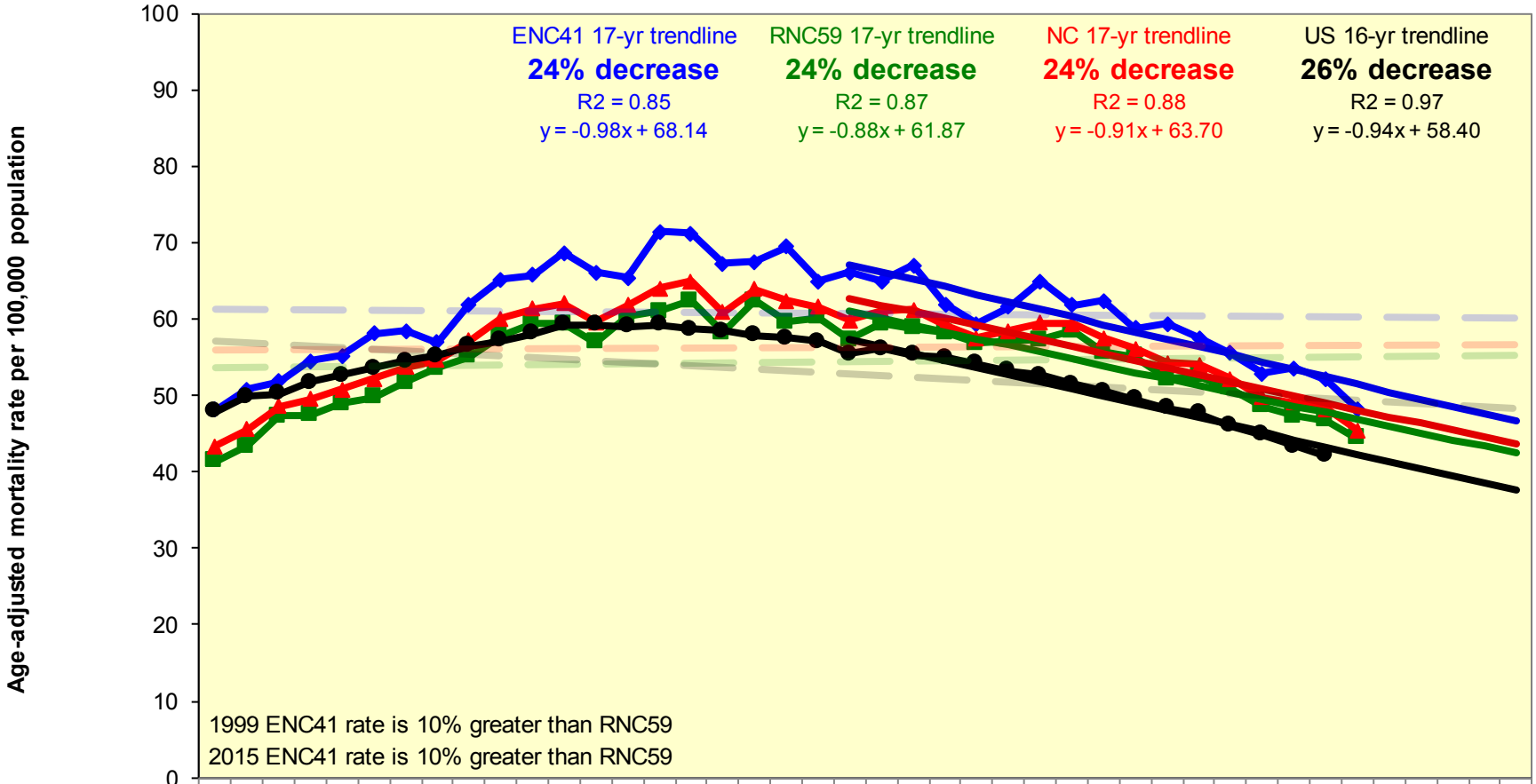


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	40	42	42	46	47	50	50	49	54	58	59	61	60	59	65	66	63	64	66	63	64	64	65	60	59	61	66	63	64	61	63	62	61	60	62	62	59					
RNC59	38	40	43	44	46	47	49	51	53	56	58	58	56	60	61	62	59	63	61	62	59	62	58	58	57	58	58	59	57	57	55	56	56	54	54	54	52					
NC	38	40	43	45	46	48	50	51	53	57	59	59	57	60	62	64	60	64	62	62	61	63	60	58	57	59	61	60	59	58	57	58	57	56	56	56	54					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	5% LT	4% LT	ENC41
5% GT		2% GT	RNC59
4% GT	2% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	12% LT	8% LT	ENC41
13% GT		4% GT	RNC59
9% GT	4% LT		NC

Figure 6.2 ii. Cancer - Trachea, Bronchus, Lung: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

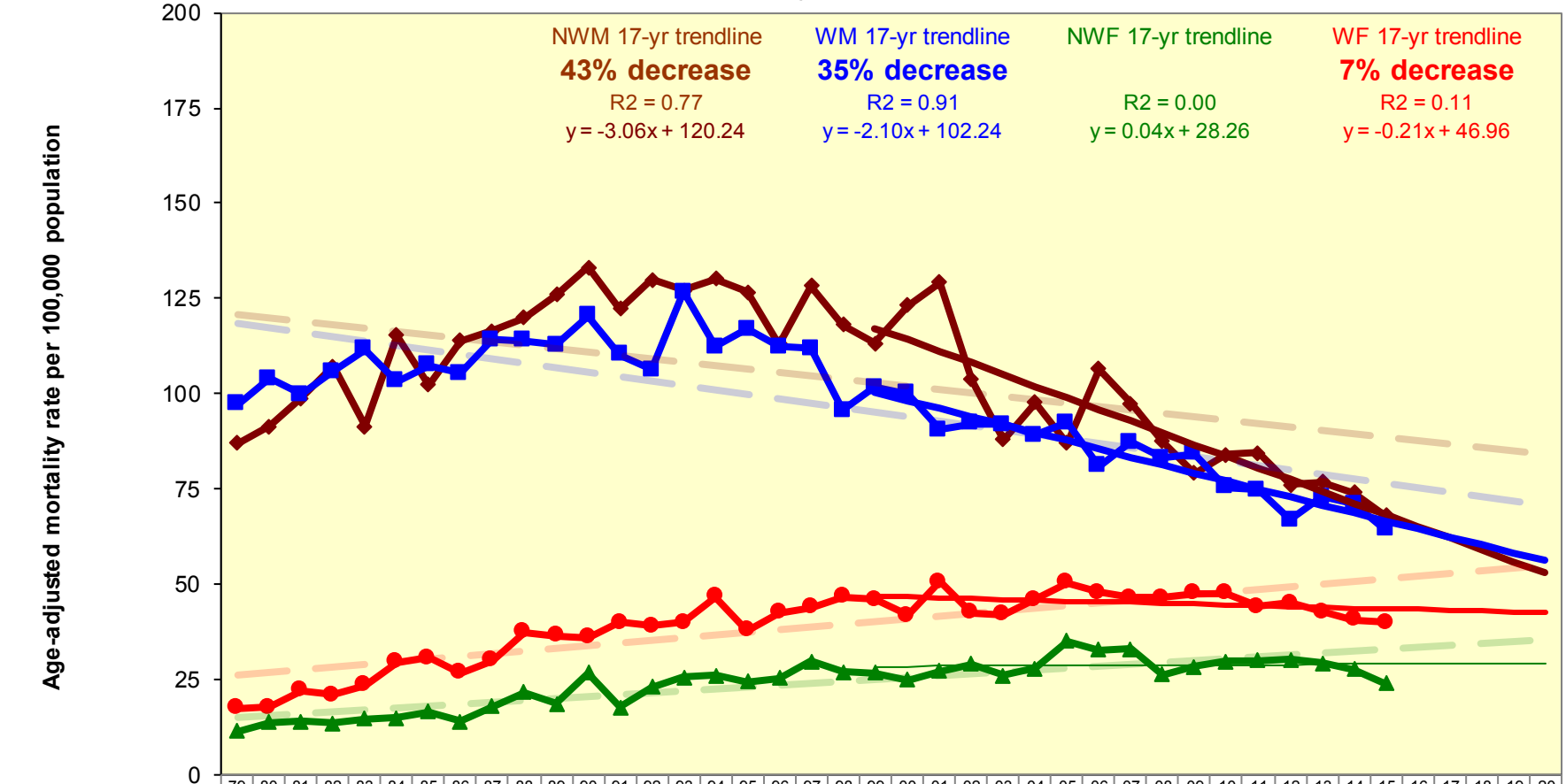


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	48	51	52	55	55	58	58	57	62	65	66	69	66	65	71	71	67	67	70	65	66	65	67	62	59	62	65	62	62	59	59	58	56	53	54	52	48					
RNC59	41	43	47	47	49	50	52	54	55	58	60	59	57	60	61	62	58	62	60	60	57	59	59	58	57	57	57	58	56	55	52	53	51	49	47	47	44					
NC	43	46	49	50	51	52	54	55	57	60	61	62	60	62	64	65	61	64	62	62	60	61	61	59	58	58	60	59	58	56	54	54	52	50	49	48	46					
US	48	50	50	52	53	54	55	55	56	57	58	59	59	59	59	59	58	58	58	57	55	56	55	55	54	53	53	52	51	50	48	48	46	45	43	42						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	9% LT	7% LT	14% LT	ENC41
10% GT		3% GT	6% LT	RNC59
7% GT	3% LT		8% LT	NC
17% GT	6% GT	9% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	9% LT	6% LT	17% LT	ENC41
10% GT		3% GT	9% LT	RNC59
7% GT	3% LT		12% LT	NC
21% GT	10% GT	13% GT		US

Figure 6.2 iii. Cancer - Trachea, Bronchus, Lung: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	87	91	99	107	91	115	102	114	116	120	126	133	122	130	127	130	127	113	128	118	113	123	129	104	88	98	87	107	97	87	79	84	85	76	77	74	68					
WM	97	104	100	106	111	103	107	105	114	114	113	120	110	106	127	112	117	112	112	96	101	100	90	92	92	89	92	81	87	83	84	75	75	67	73	71	64					
NWF	11	14	14	13	15	15	16	14	18	21	19	27	18	23	26	26	24	25	30	27	27	25	27	29	26	28	35	33	33	26	28	30	30	30	29	28	24					
WF	17	18	22	21	23	30	31	27	30	37	36	36	40	39	40	47	38	42	44	47	46	42	51	43	42	46	50	48	46	46	48	48	44	45	43	40	40					

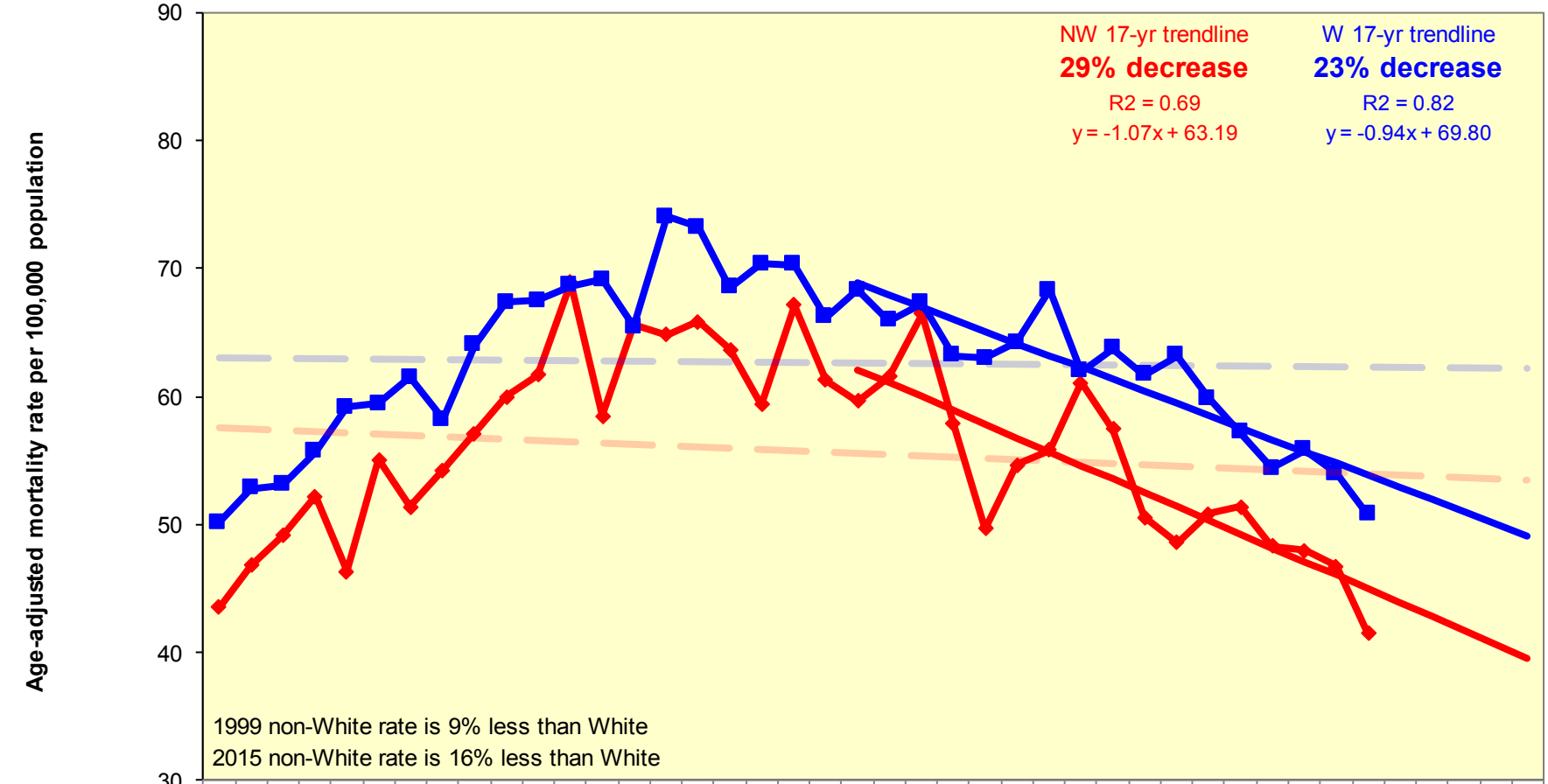
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	15% LT	76% LT	61% LT	NWM
18% GT		72% LT	54% LT	WM
325% GT	262% GT		66% GT	NWF
156% GT	118% GT	40% LT		WF

Comparison of Fitted Rates in 2015

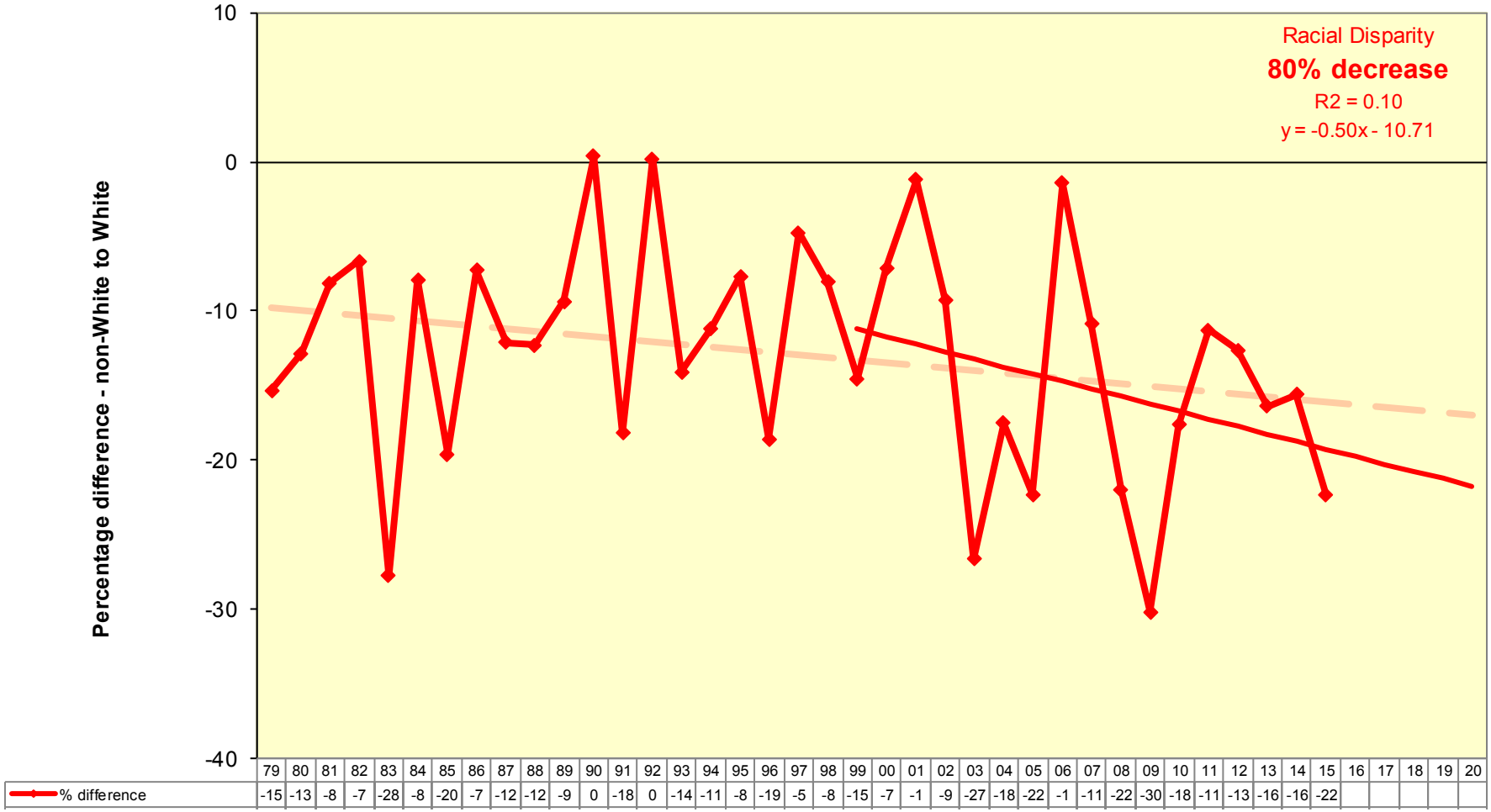
NWM	WM	NWF	WF	
	4% LT	59% LT	39% LT	NWM
4% GT		58% LT	36% LT	WM
146% GT	138% GT		51% GT	NWF
63% GT	57% GT	34% LT		WF

Figure 6.2 iv. Cancer - Trachea, Bronchus, Lung: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	44	47	49	52	46	55	51	54	57	60	62	69	58	66	65	66	64	59	67	61	60	62	66	58	50	55	56	61	57	51	49	51	51	48	48	47	41					
W	50	53	53	56	59	59	61	58	64	67	67	69	69	65	74	73	69	70	70	66	68	66	67	63	63	64	68	62	64	62	63	60	57	54	56	54	51					

Figure 6.2 v. Cancer - Trachea, Bronchus, Lung:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



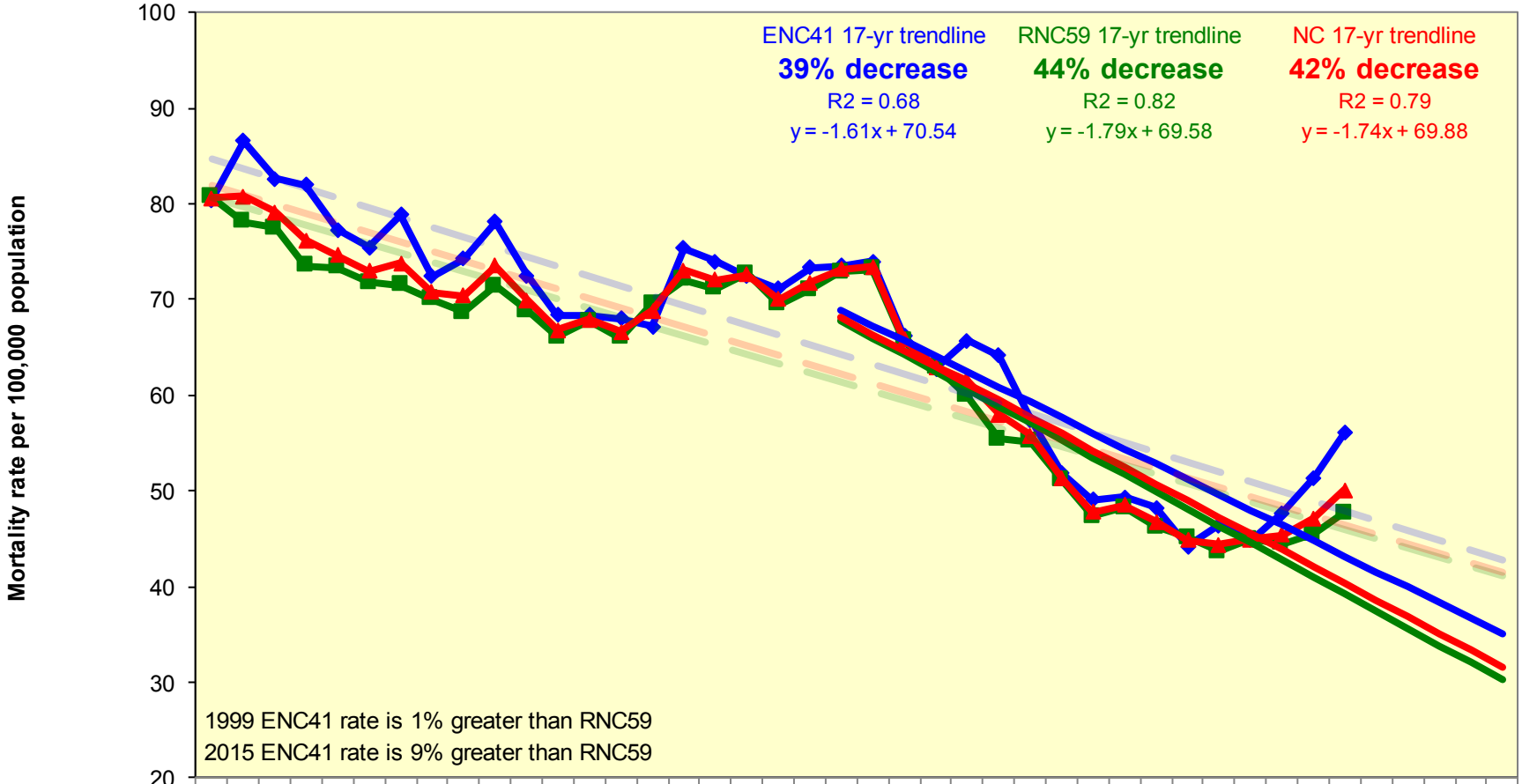
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	-15	-13	-8	-7	-28	-8	-20	-7	-12	-12	-9	0	-18	0	-14	-11	-8	-19	-5	-8	-15	-7	-1	-9	-27	-18	-22	-1	-11	-22	-30	-18	-11	-13	-16	-16	-22					

Cerebrovascular Disease

- ENC's cerebrovascular disease mortality rate has increased for the last 3 years, but the 17-year trend is decreasing in a similar trend to RNC and NC.
- While the ENC age-adjusted cerebrovascular disease mortality rate is 8% greater than the rate for the rest of the state, it is decreasing and converging on the RNC and NC rates. The *Healthy People 2010* goal of less than 48 deaths per 100,000 was met in 2010, but the rate has ticked up slightly to 50 deaths per 100,000.
- Non-White males have the highest mortality rate for cerebrovascular disease. The rate has increased for the last 2 years, but the rate trend continues to decrease and converge with the other demographic groups. The greatest relative improvement in cerebrovascular disease mortality over 17 years is by White females who experienced a 57% decrease. The non-White male rate is decreasing and converging with White males, but is still 56% greater in 2015.
- The cerebrovascular disease mortality rate for non-Whites is decreasing and converging with that of whites but was still 39% greater than the White rate in 2015.
- The 17-year 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 6.3 i. Cerebrovascular Disease: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

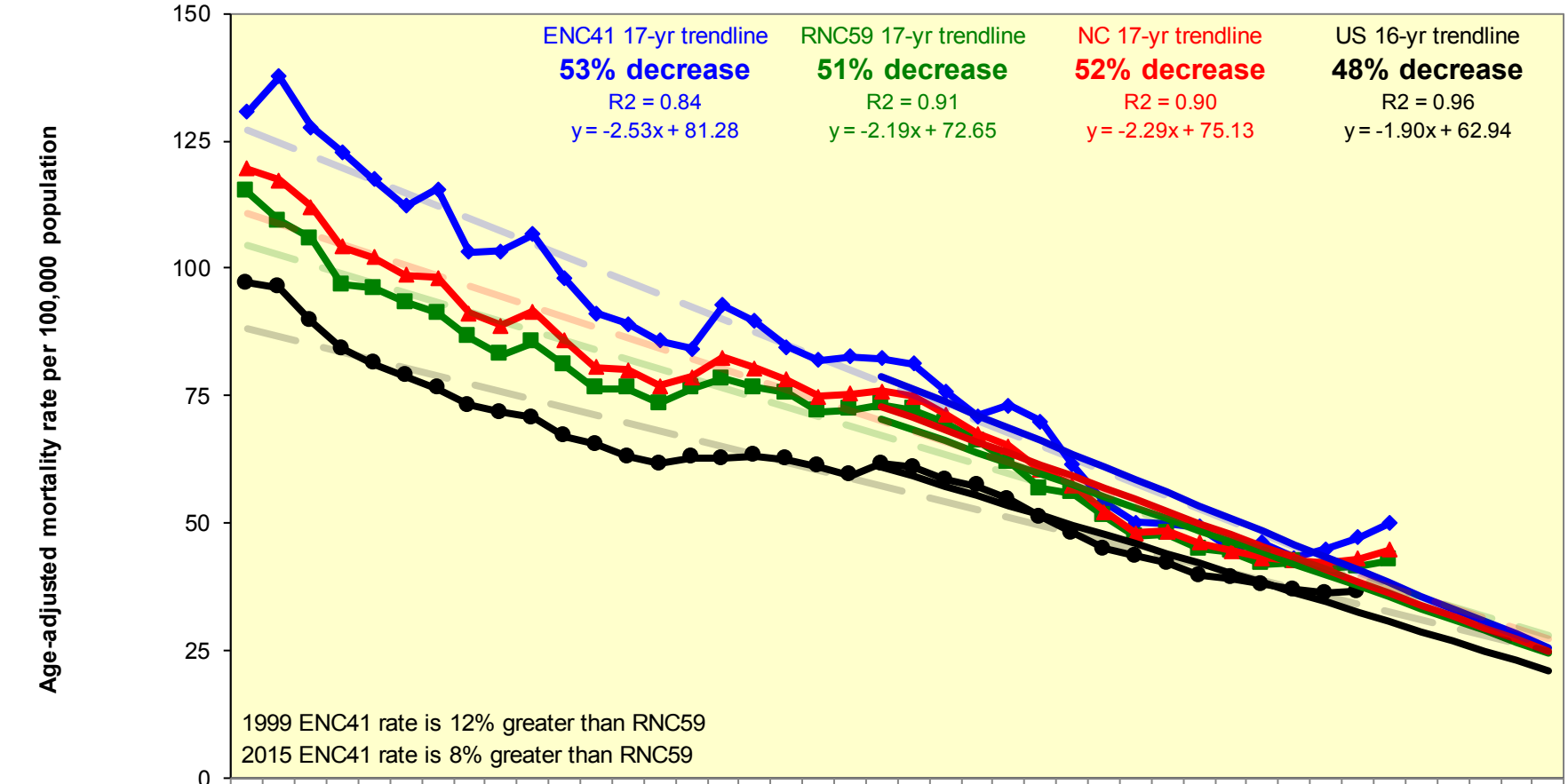


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	80	87	83	82	77	75	79	72	74	78	73	68	68	68	67	75	74	72	71	73	74	74	66	63	66	64	57	52	49	49	48	44	46	45	48	51	56					
RNC59	81	78	78	73	73	72	71	70	69	71	69	66	68	66	70	72	71	73	70	71	73	73	66	63	60	55	55	51	47	48	46	45	44	45	45	46	48					
NC	81	81	79	76	75	73	74	71	70	74	70	67	68	67	69	73	72	73	70	72	73	73	66	63	62	58	56	51	48	49	47	45	44	45	45	47	50					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	1% LT	1% LT	ENC41
1% GT		0% GT	RNC59
1% GT	0% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	8% LT	6% LT	ENC41
9% GT		3% GT	RNC59
6% GT	3% LT		NC

Figure 6.3 ii. Cerebrovascular Disease: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

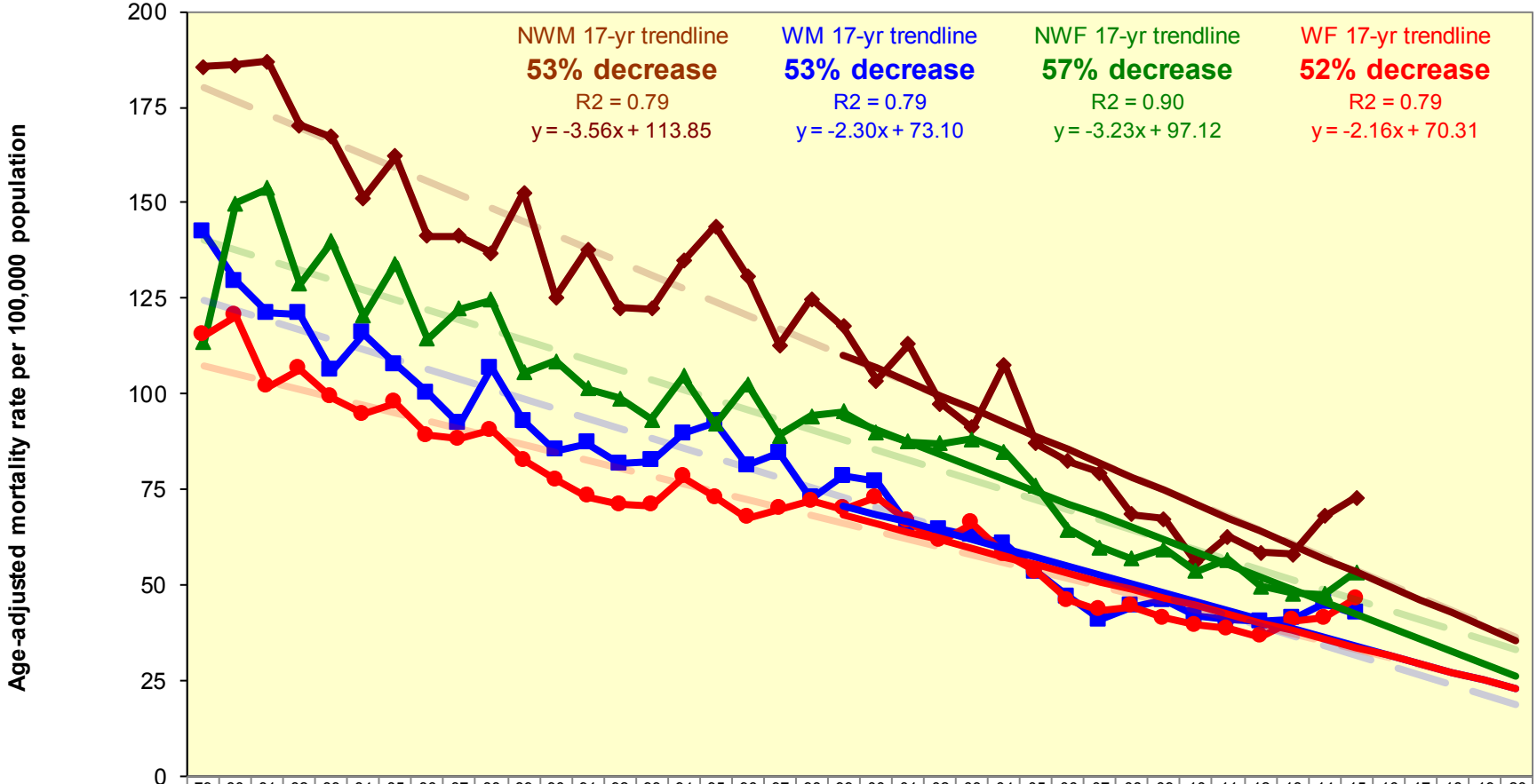


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	131	138	128	123	117	112	115	103	103	107	98	91	89	86	84	93	90	85	82	83	82	81	76	71	73	70	61	54	50	50	49	45	46	43	45	47	50					
RNC59	115	109	106	97	96	93	91	86	83	85	81	76	76	73	76	78	77	75	72	72	73	72	70	66	62	57	56	51	47	48	45	44	42	42	41	41	43					
NC	120	117	112	104	102	99	98	91	89	91	86	81	80	77	79	83	80	78	75	75	76	75	71	68	65	60	57	52	48	48	46	45	43	43	42	43	45					
US	97	96	90	84	81	79	76	73	72	71	67	65	63	61	63	63	63	62	61	59	62	61	58	57	55	51	48	45	44	42	40	39	38	37	36	36						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	11% LT	8% LT	23% LT	ENC41
12% GT		3% GT	13% LT	RNC59
8% GT	3% LT		16% LT	NC
29% GT	15% GT	19% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	8% LT	5% LT	20% LT	ENC41
8% GT		2% GT	14% LT	RNC59
6% GT	2% LT		16% LT	NC
25% GT	16% GT	18% GT		US

Figure 6.3 iii. Cerebrovascular Disease: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

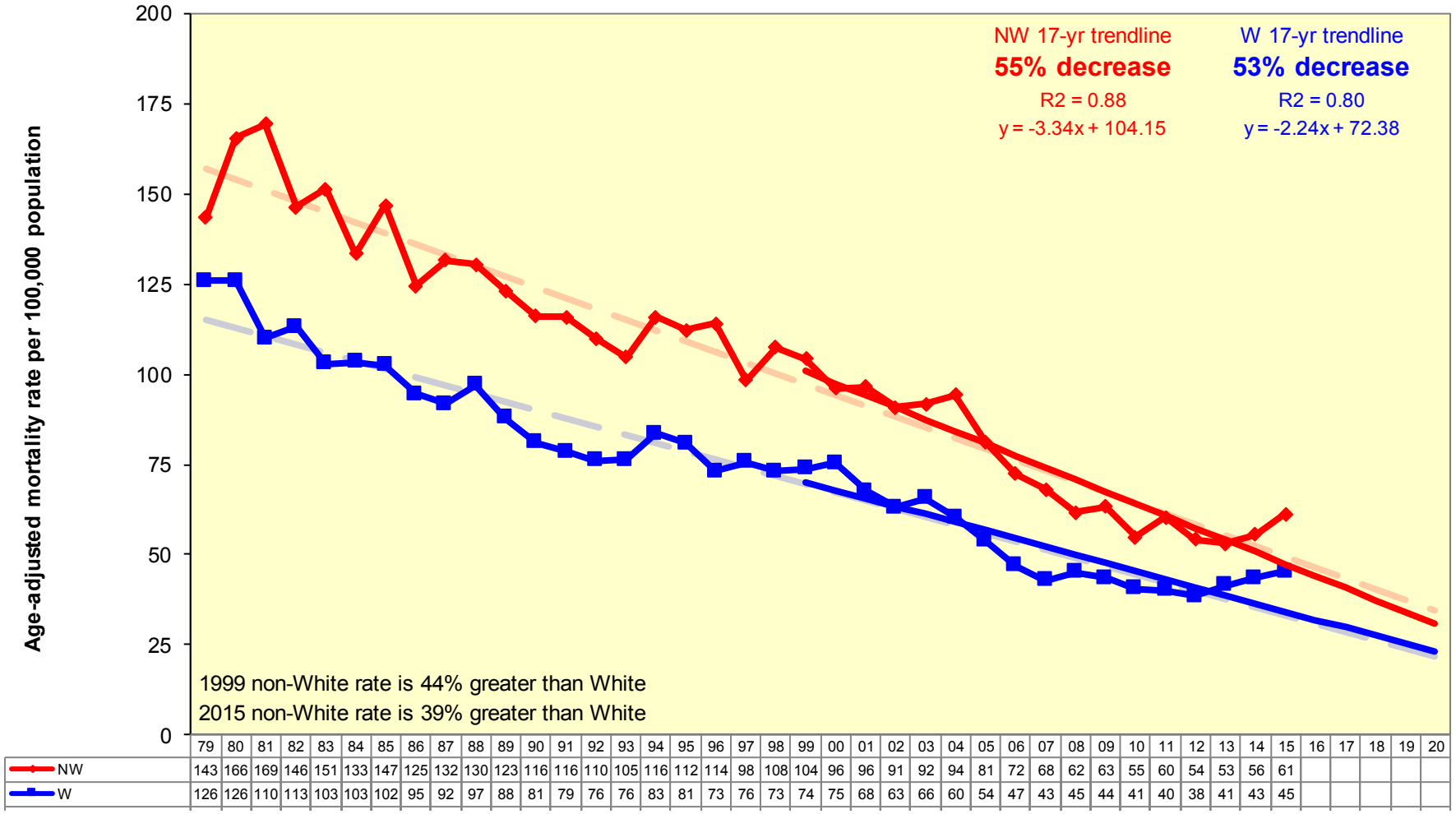


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	186	186	187	170	167	151	162	141	141	137	153	125	138	123	122	135	144	131	113	125	117	104	113	97	91	108	87	82	79	68	67	56	63	58	58	68	73					
WM	142	130	121	121	106	116	108	100	92	107	93	85	87	82	82	90	93	81	85	73	78	77	65	65	63	61	53	47	41	44	46	42	41	40	41	45	42					
NWF	113	150	154	129	140	120	134	114	122	125	106	109	101	99	93	105	92	103	89	94	95	90	87	87	88	85	76	64	60	57	59	54	57	50	48	47	53					
WF	115	120	102	106	99	95	98	89	88	90	83	77	73	71	71	78	73	67	70	72	70	73	66	61	66	58	53	46	43	44	41	39	39	36	41	41	46					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	36% LT	15% LT	38% LT	NWM
56% GT		33% GT	4% LT	WM
17% GT	25% LT		28% LT	NWF
62% GT	4% GT	38% GT		WF

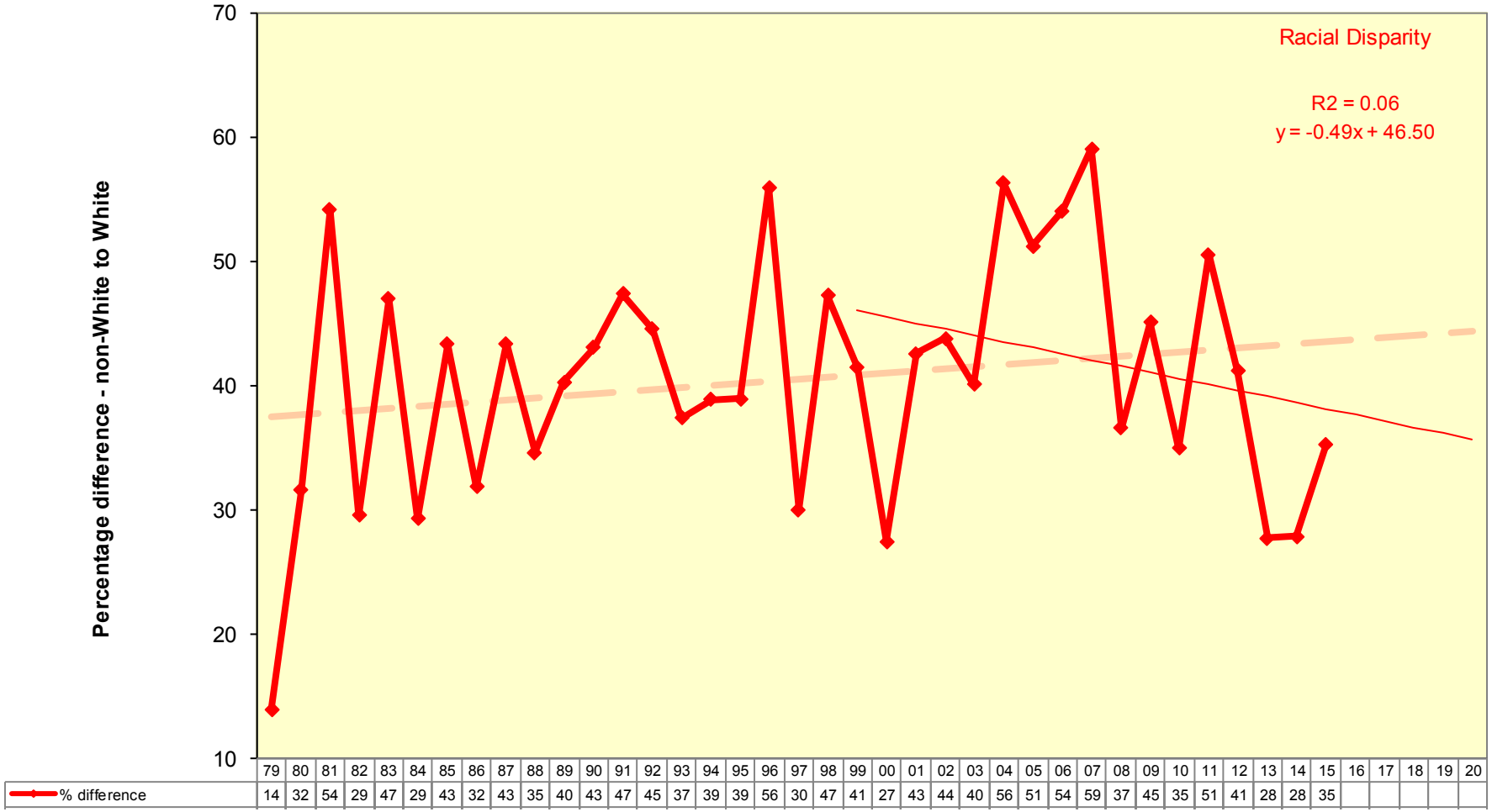
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	36% LT	20% LT	37% LT	NWM
56% GT		25% GT	2% LT	WM
25% GT	20% LT		21% LT	NWF
59% GT	2% GT	27% GT		WF

Figure 6.3 iv. Cerebrovascular Disease: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	143	166	169	146	151	133	147	125	132	130	123	116	116	110	105	116	112	114	98	108	104	96	96	91	92	94	81	72	68	62	63	55	60	54	53	56	61					
W	126	126	110	113	103	103	102	95	92	97	88	81	79	76	76	83	81	73	76	73	74	75	68	63	66	60	54	47	43	45	44	41	40	38	41	43	45					

Figure 6.3 v. Cerebrovascular Disease:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



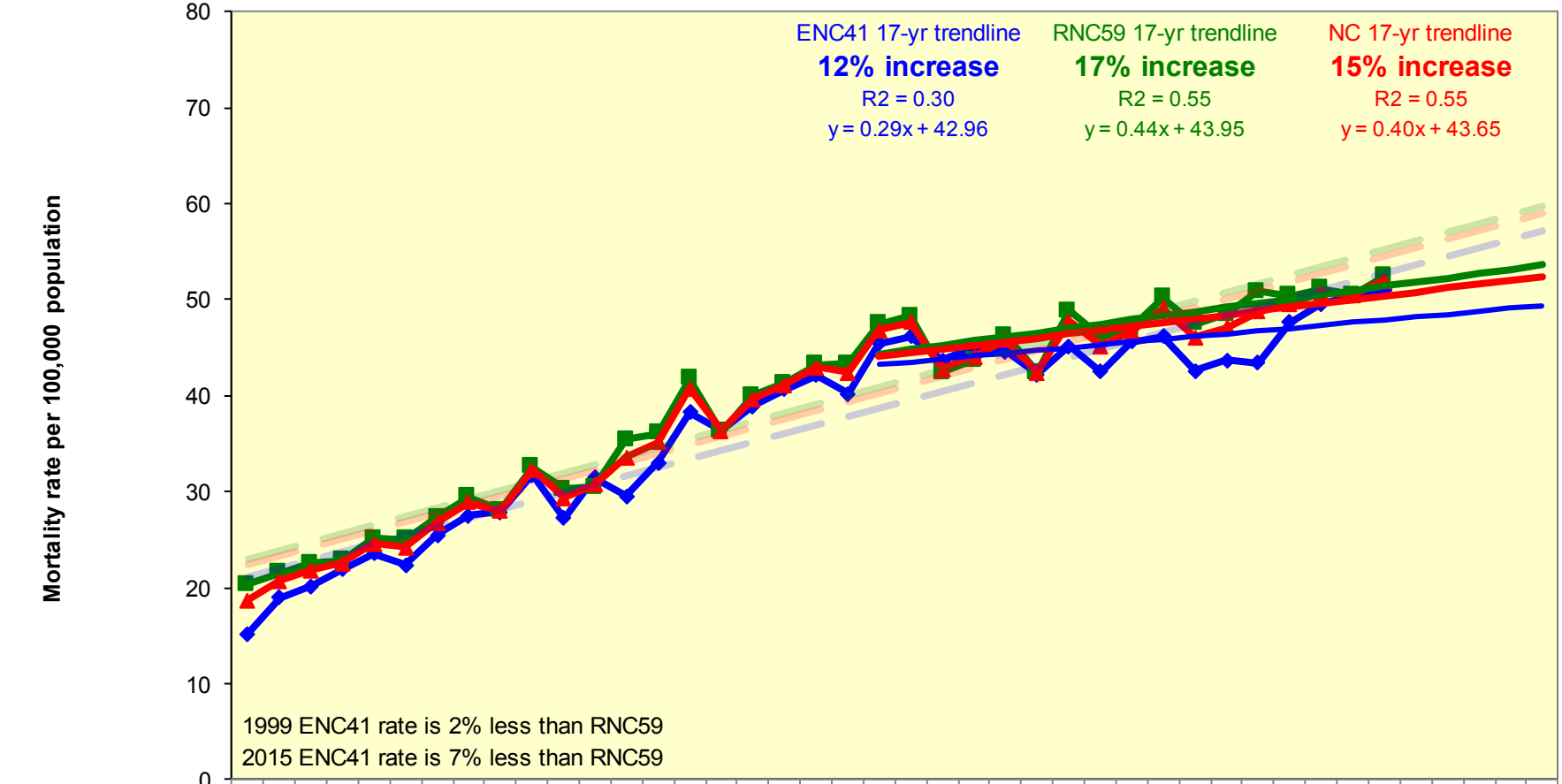
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	14	32	54	29	47	29	43	32	43	35	40	43	47	45	37	39	39	56	30	47	41	27	43	44	40	56	51	54	59	37	45	35	51	41	28	28	35					

Chronic Lower Respiratory Diseases

- CLRD mortality rates for ENC, RNC, and NC have increased 12%, 17% and 15% respectively during the last 17 years. In 1999, the ENC trend was 2% less than RNC; in 2015 the ENC was 7% less than RNC.
- The 17-year CLRD age-adjusted rate for ENC is decreasing at a faster pace than the US rate. In 2015, the ENC rate trend was 8% less than RNC compared to 1999 when the ENC rate was 5% greater than RNC. The RNC and NC trends are unreliable.
- Fitted rates for non-White males and White males have decreased over 17 years by 38% and 29%, respectively. The rate for White males remains the highest and although decreasing, is diverging from the non-White male rate. The 17-year trend for White females has increased 6%. The rate for non-White females is unreliable.
- The 17-year White morality rates are greater than non-White rates and the rate of decline is less for Whites, leading to a divergence more favorable to non-Whites.
- There is a 30% decrease in the disparity between White rates and non-White rates in a reliable trend.

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. Chronic Lower Respiratory Diseases: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

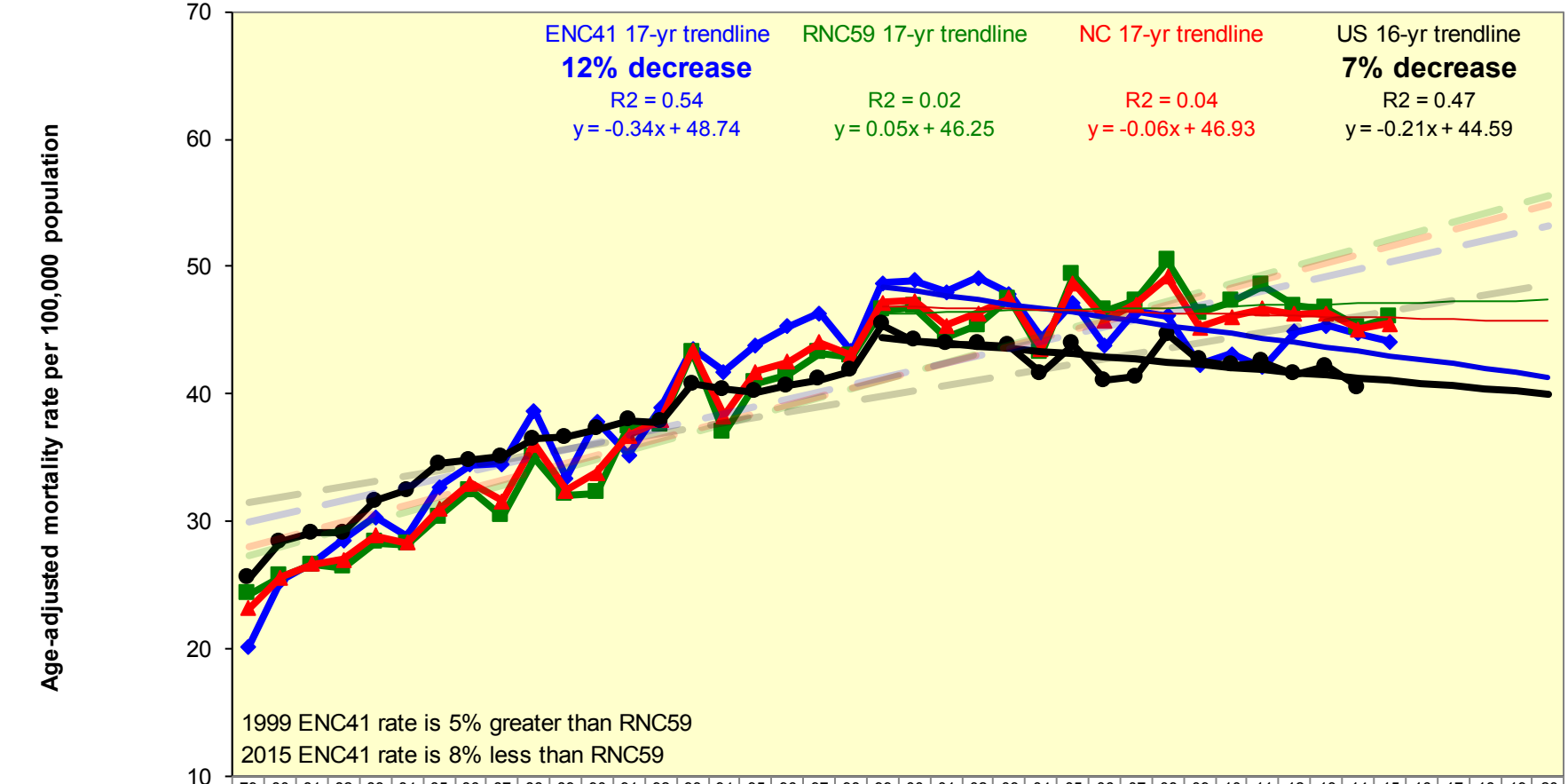


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	15	19	20	22	24	22	25	27	28	32	27	31	30	33	38	36	39	41	42	40	45	46	44	45	45	42	45	42	46	46	43	44	43	48	50	50	51					
RNC59	20	22	23	23	25	25	27	29	28	33	30	30	35	36	42	36	40	41	43	43	47	48	42	44	46	42	49	46	47	50	47	48	51	50	51	51	52					
NC	19	21	22	23	25	24	27	29	28	32	29	31	34	35	41	36	40	41	43	42	47	48	43	44	46	42	48	45	47	49	46	47	49	50	51	51	52					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	2% GT	2% GT	ENC41
2% LT		1% LT	RNC59
2% LT	1% GT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	7% GT	5% GT	ENC41
7% LT		2% LT	RNC59
5% LT	2% GT		NC

Figure 6.4 ii. Chronic Lower Respiratory Diseases: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

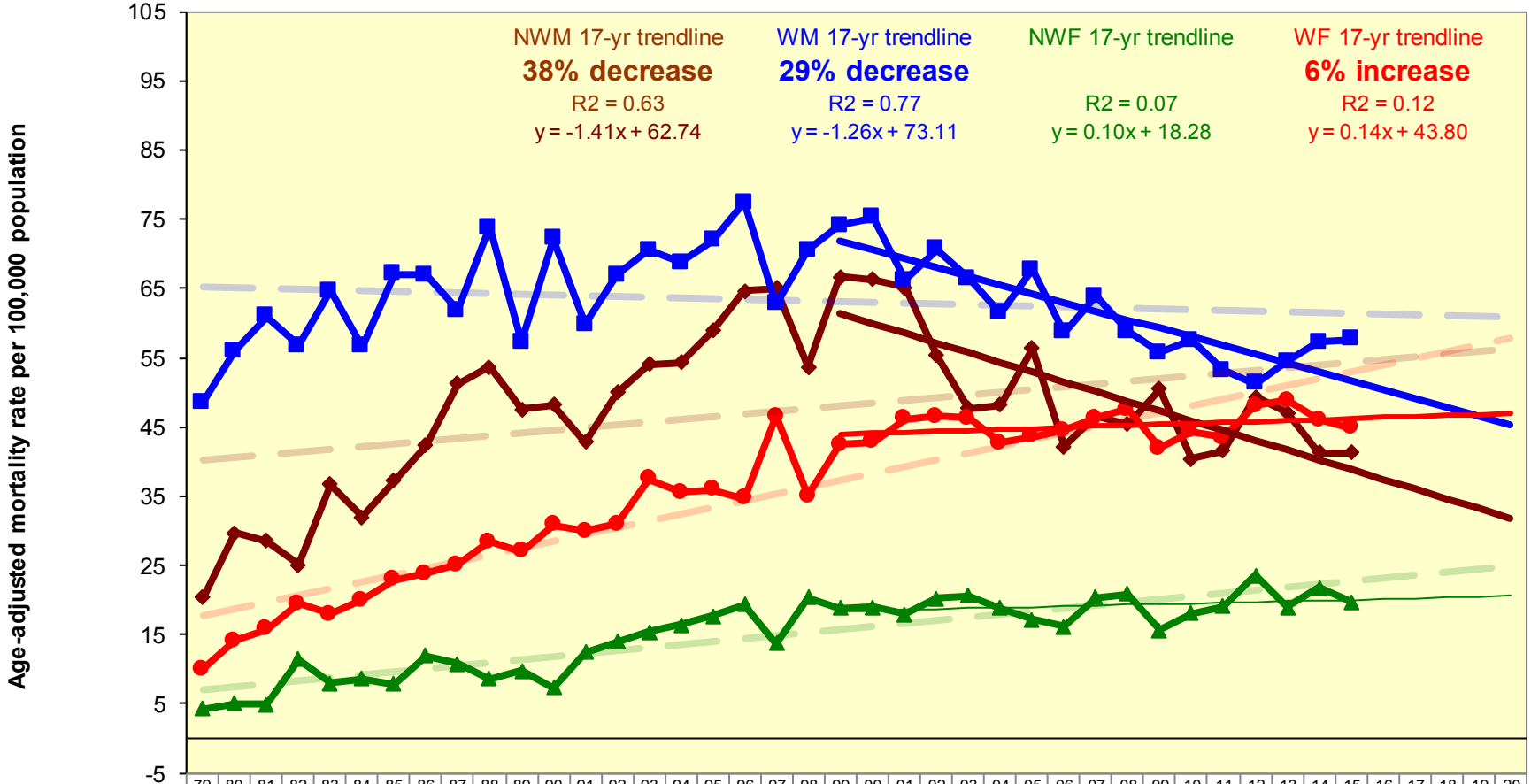


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	20	25	27	29	30	29	33	34	34	39	33	38	35	39	44	42	44	45	46	43	49	49	48	49	48	44	47	44	46	46	42	43	42	45	45	45	44					
RNC59	24	26	27	26	28	28	30	32	30	35	32	32	37	38	43	37	41	41	43	43	47	47	44	45	47	43	49	47	47	50	46	47	49	47	47	45	46					
NC	23	26	27	27	29	28	31	33	32	36	32	34	37	38	43	38	42	42	44	43	47	47	45	46	48	44	49	46	47	49	45	46	47	46	46	45	45					
US	26	28	29	29	32	32	35	35	35	36	37	37	38	38	41	40	40	41	41	42	45	44	44	44	44	42	44	41	41	45	43	42	43	42	42	40						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	5% LT	4% LT	9% LT	ENC41
5% GT		1% GT	4% LT	RNC59
4% GT	1% LT		5% LT	NC
9% GT	4% GT	5% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	9% GT	6% GT	5% LT	ENC41
8% LT		2% LT	12% LT	RNC59
6% LT	2% GT		10% LT	NC
5% GT	14% GT	12% GT		US

Figure 6.4 iii. Chronic Lower Respiratory Diseases: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

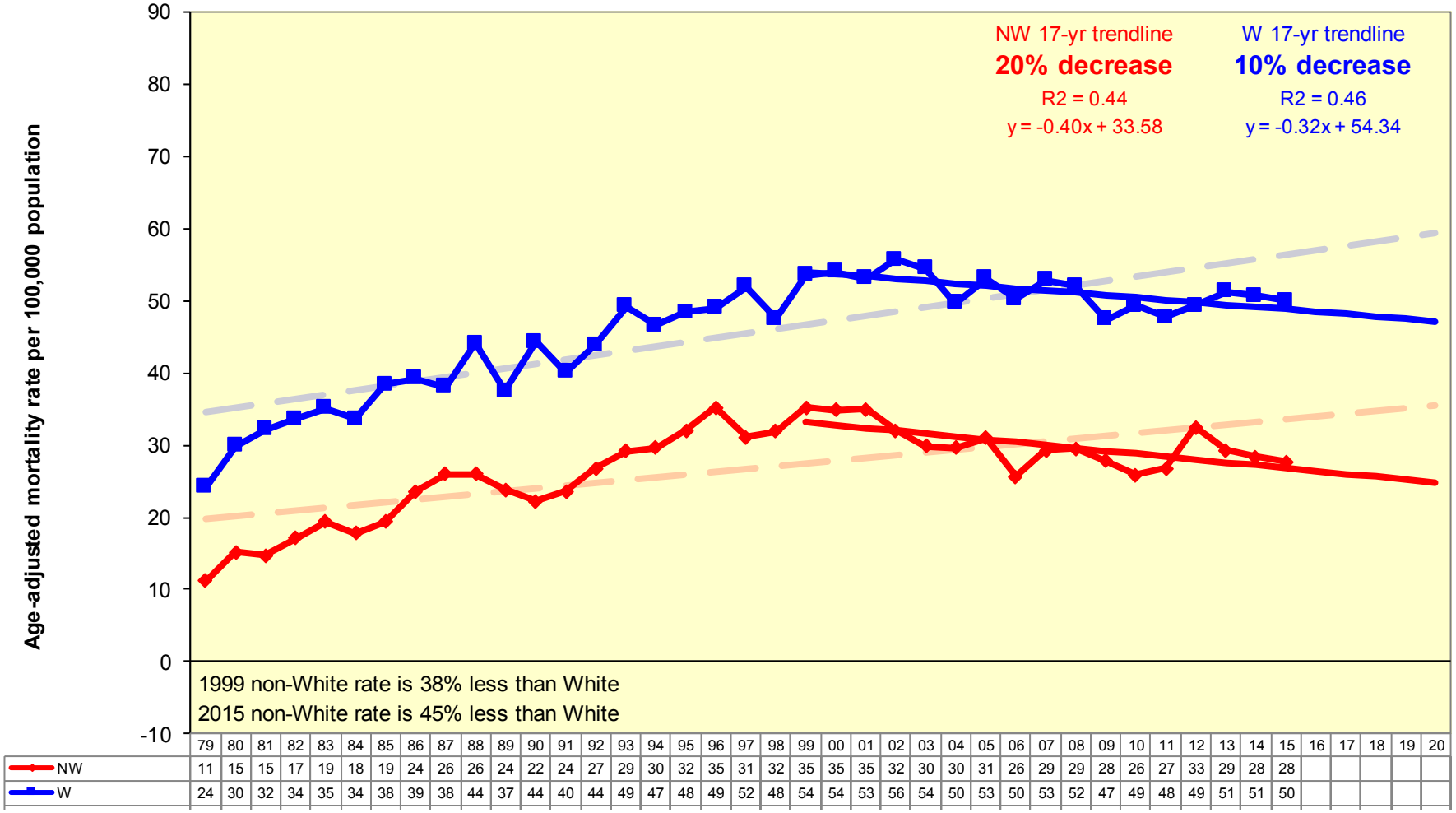


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	20	30	29	25	37	32	37	42	51	54	48	48	43	50	54	54	59	65	65	54	67	66	65	55	48	48	56	42	46	45	50	40	42	49	47	41	41					
WM	49	56	61	57	65	57	67	67	62	74	57	72	60	67	71	69	72	77	63	71	74	75	66	71	66	61	68	59	64	59	56	58	53	51	54	57	58					
NWF	4	5	5	11	8	9	8	12	11	9	10	7	12	14	15	16	18	19	14	20	19	19	18	20	21	19	17	16	20	21	16	18	19	24	19	22	20					
WF	10	14	16	19	18	20	23	24	25	28	27	31	30	31	38	36	36	35	47	35	42	43	46	47	46	43	44	45	46	48	42	44	43	48	49	46	45					

Comparison of Fitted Rates in 1999					
NWM	WM	NWF	WF		
	17% GT	71% LT	30% LT	NWM	
14% LT		75% LT	40% LT	WM	
243% GT	300% GT		140% GT	NWF	
43% GT	67% GT	58% LT		WF	

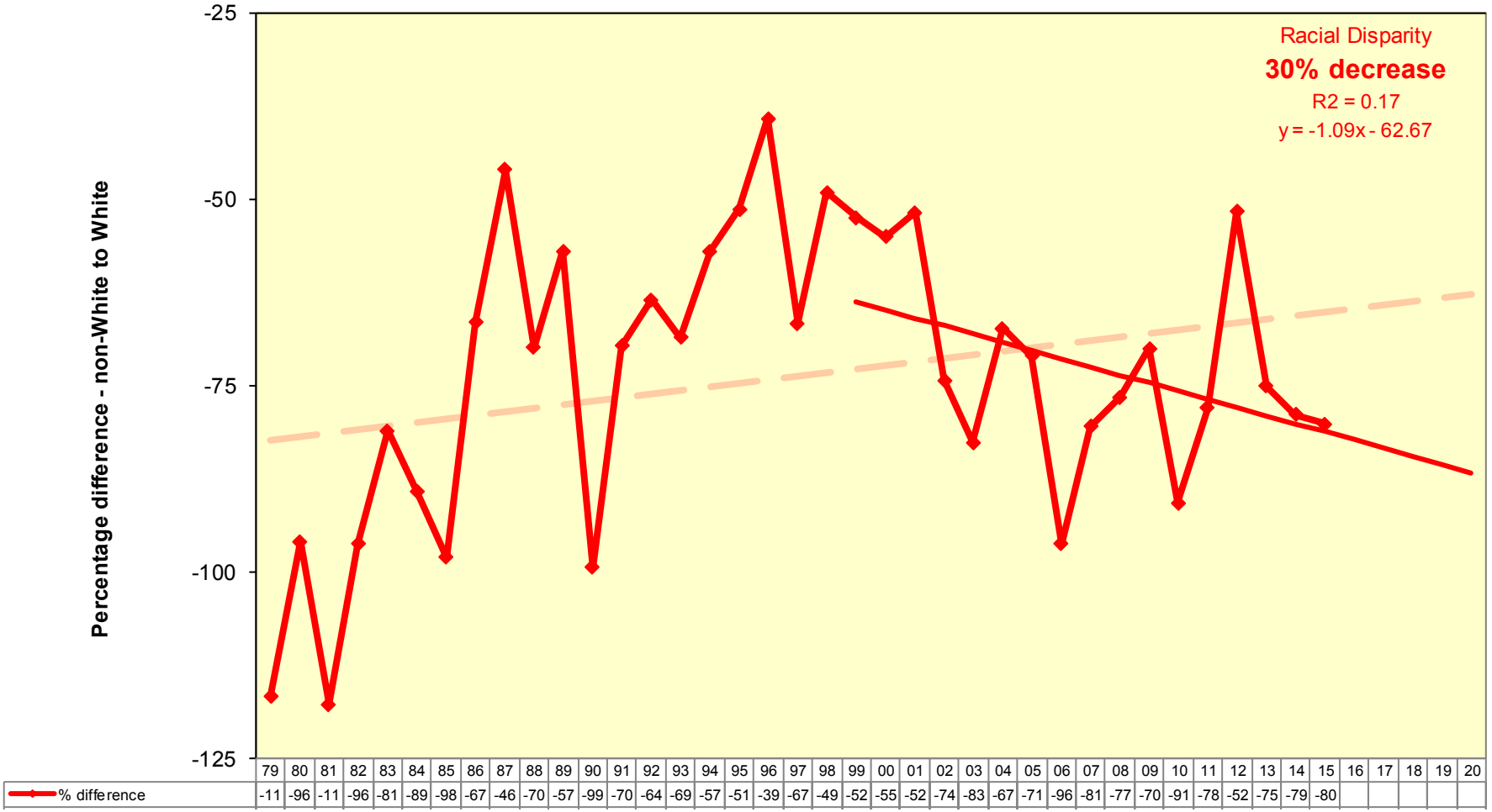
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	32% GT	50% LT	15% GT	NWM
24% LT		62% LT	13% LT	WM
102% GT	165% GT		131% GT	NWF
13% LT	15% GT	57% LT		WF

Figure 6.4 iv. Chronic Lower Respiratory Diseases: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	11	15	15	17	19	18	19	24	26	26	24	22	24	27	29	30	32	35	31	32	35	35	35	32	30	30	31	26	29	29	28	26	27	33	29	28	28					
W	24	30	32	34	35	34	38	39	38	44	37	44	40	44	49	47	48	49	52	48	54	54	53	56	54	50	53	50	53	52	47	49	48	49	51	51	50					

Figure 6.4 v. Chronic Lower Respiratory Diseases: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020

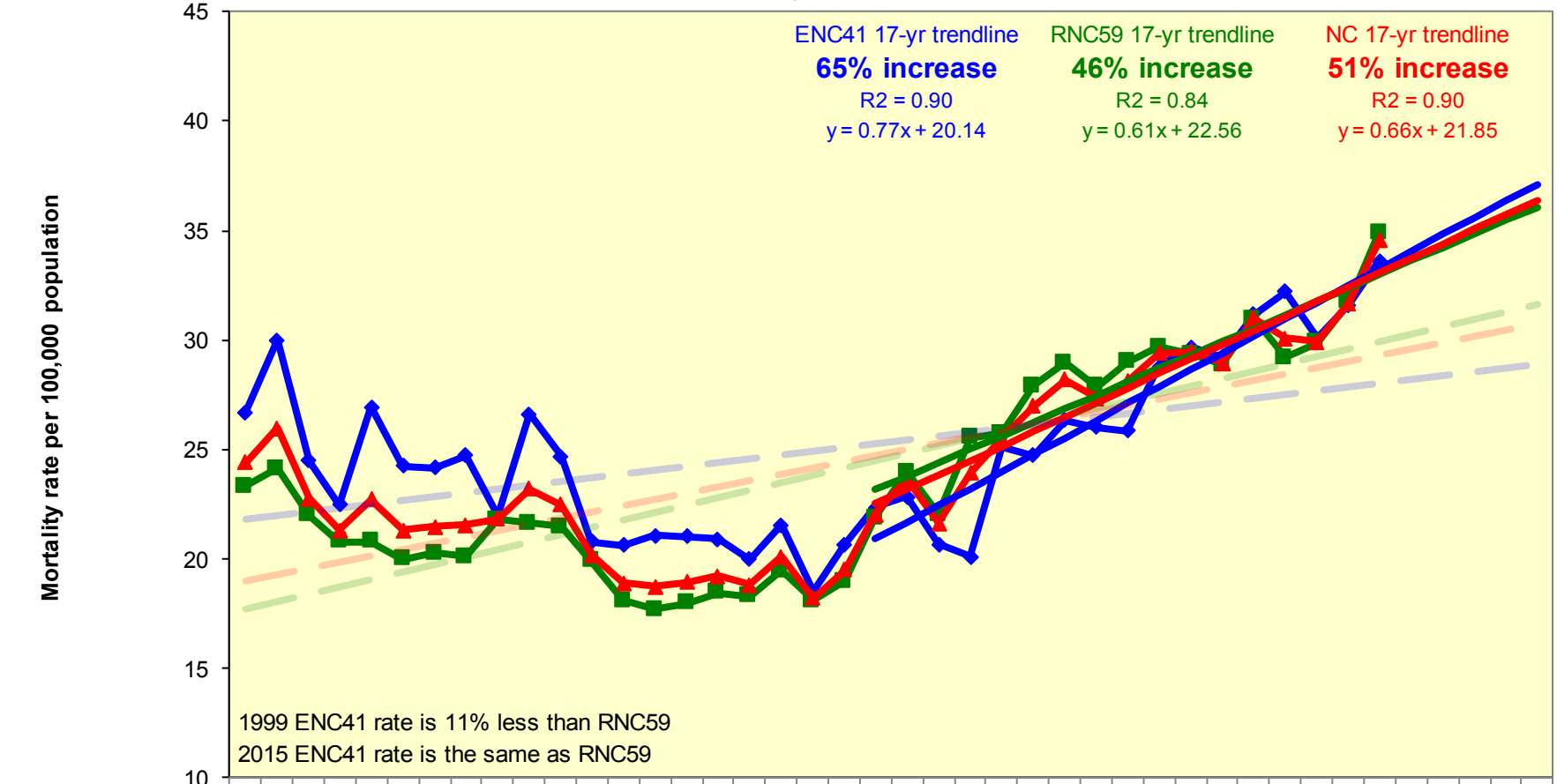


All Other Unintentional Injuries and Adverse Effects

- Mortality from unintentional injuries and adverse effects is increasing in ENC (65% increase over 17 years). The trends for RNC and NC are also increasing and all three have converged.
- The age-adjusted mortality rate trend for ENC, RNC and NC are increasing. All three increased 37% or more over the 17 years.
- The 17-year trends for White males and White females are increasing significantly (64% and 111% increase, respectively). Mortality rates for non-White males and non-White females have decreased but the trends are not reliable.
- White rates have increased 81% over the 17 year period. Non-White rates have dropped below white rates, but the trend is unreliable.
- Between 1999 and 2015, racial disparity has decreased sharply, eliminating the unfavorable disparity in relation to whites, and favoring non-Whites.

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. All Other Unintentional Injuries and Adverse Effects: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

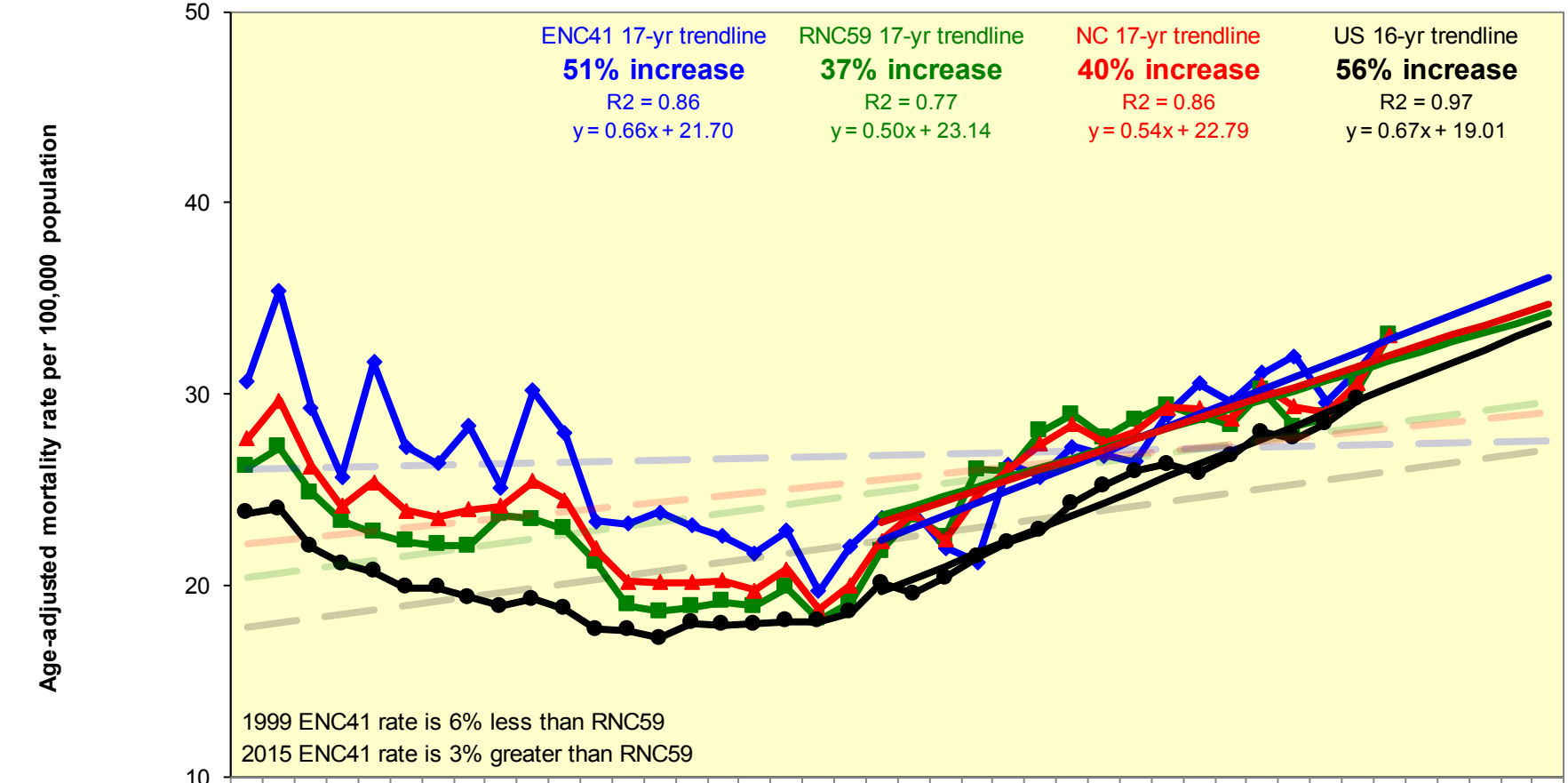


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	27	30	24	22	27	24	24	25	22	27	25	21	21	21	21	21	20	22	18	21	22	23	21	20	25	25	26	26	26	29	30	29	31	32	30	32	34					
RNC59	23	24	22	21	21	20	20	20	22	22	21	20	18	18	18	18	18	19	18	19	22	24	22	26	26	28	29	28	29	30	29	29	31	29	30	32	35					
NC	24	26	23	21	23	21	21	22	22	23	22	20	19	19	19	19	19	20	18	20	22	24	22	24	26	27	28	27	28	29	29	29	31	30	30	32	35					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	12% GT	9% GT	ENC41
11% LT		3% LT	RNC59
8% LT	3% GT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	0% LT	0% LT	ENC41
0% GT		0% GT	RNC59
0% GT	0% LT		NC

Figure 6.5 ii. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

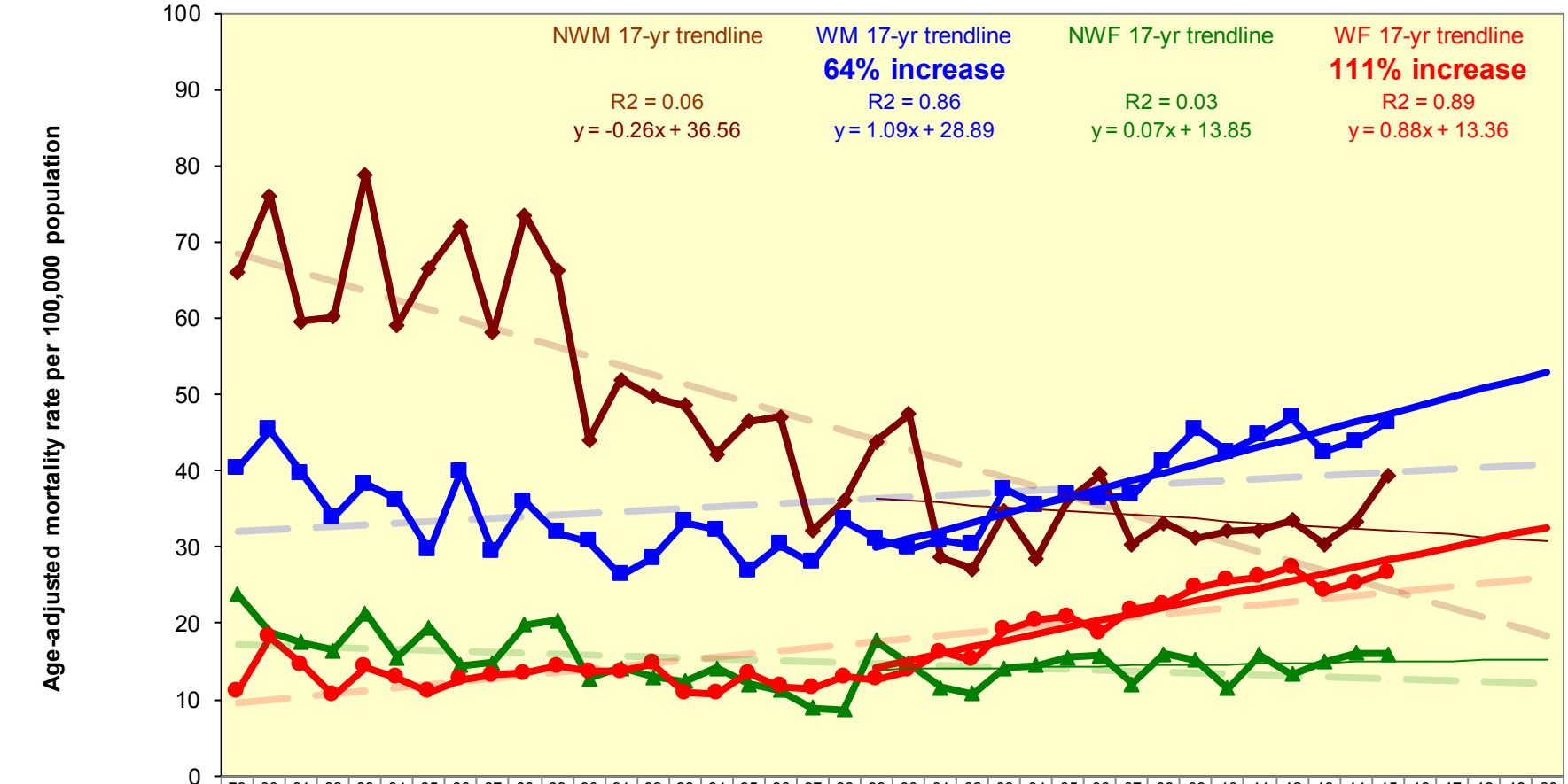


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	31	35	29	26	32	27	26	28	25	30	28	23	23	24	23	23	22	23	20	22	24	24	22	21	26	26	27	27	26	29	31	30	31	32	30	31	33					
RNC59	26	27	25	23	23	22	22	22	24	23	23	21	19	19	19	19	19	20	18	19	22	24	23	26	26	28	29	28	29	29	29	28	30	28	29	30	33					
NC	28	30	26	24	25	24	24	24	24	25	24	22	20	20	20	20	20	21	19	20	22	24	22	25	26	27	28	27	28	29	29	29	30	29	29	31	33					
US	24	24	22	21	21	20	20	19	19	19	19	18	18	17	18	18	18	18	18	19	20	20	20	21	22	23	24	25	26	26	26	27	28	28	28	30						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	7% GT	5% GT	12% LT	ENC41
6% LT		2% LT	18% LT	RNC59
5% LT	2% GT		17% LT	NC
14% GT	22% GT	20% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	3% LT	2% LT	8% LT	ENC41
3% GT		1% GT	5% LT	RNC59
2% GT	1% LT		6% LT	NC
9% GT	5% GT	6% GT		US

Figure 6.5 iii. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	66	76	60	60	79	59	67	72	58	74	66	44	52	50	49	42	46	47	32	36	44	47	29	27	35	29	36	39	30	33	31	32	32	34	30	33	39					
WM	40	45	40	34	38	36	30	40	29	36	32	31	26	29	33	32	27	30	28	34	31	30	31	30	38	35	37	36	37	41	45	42	45	47	42	44	46					
NWF	24	19	18	16	21	15	19	14	15	20	20	13	14	13	12	14	12	11	9	9	18	15	12	11	14	15	15	16	12	16	15	11	16	13	15	16	16					
WF	11	18	15	10	14	13	11	13	13	13	14	14	14	15	11	11	13	12	12	13	13	14	16	15	19	20	21	19	22	23	25	26	26	27	24	25	27					

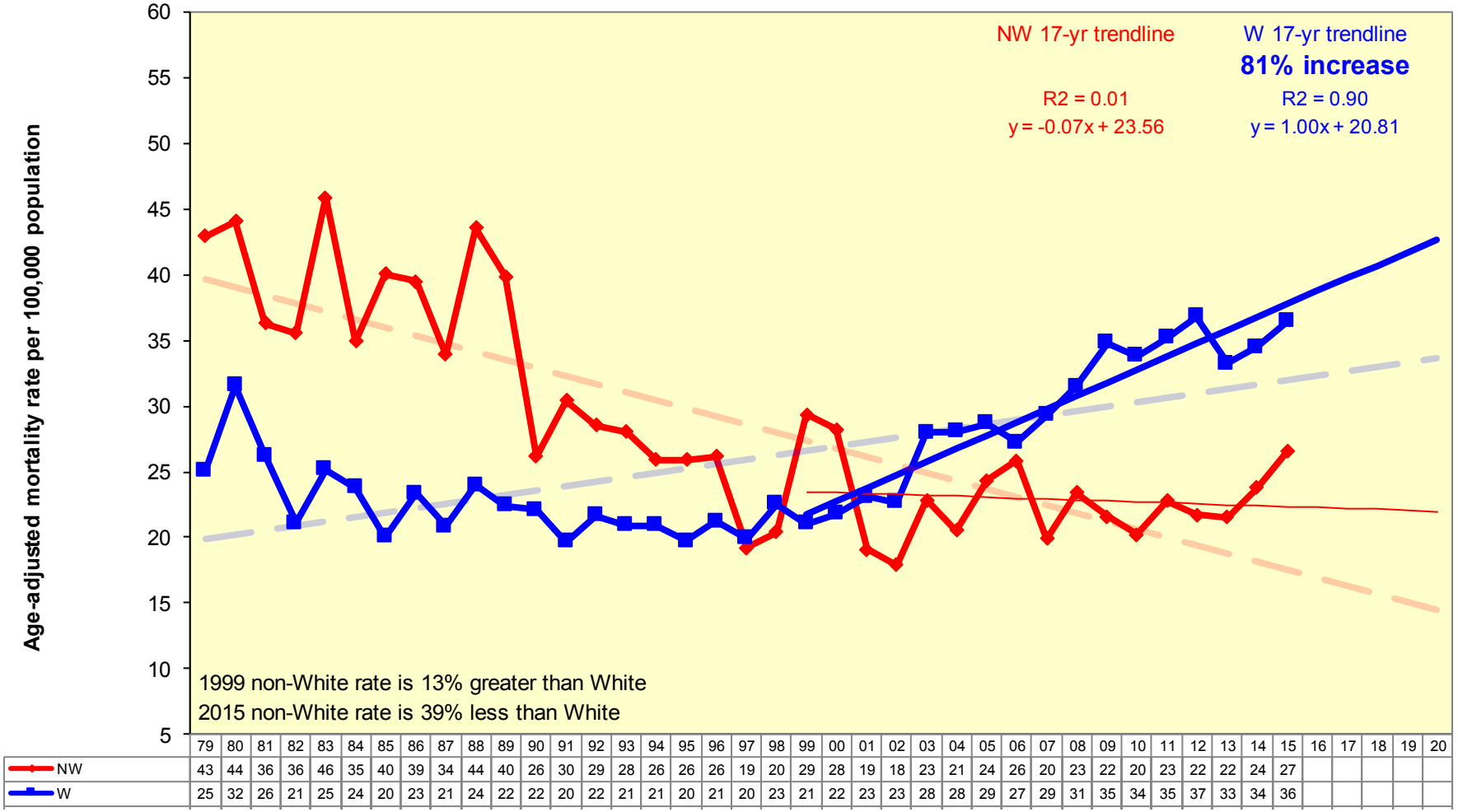
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	21% LT	62% LT	63% LT	NWM
27% GT		52% LT	54% LT	WM
164% GT	109% GT		4% LT	NWF
174% GT	116% GT	4% GT		WF

Comparison of Fitted Rates in 2015

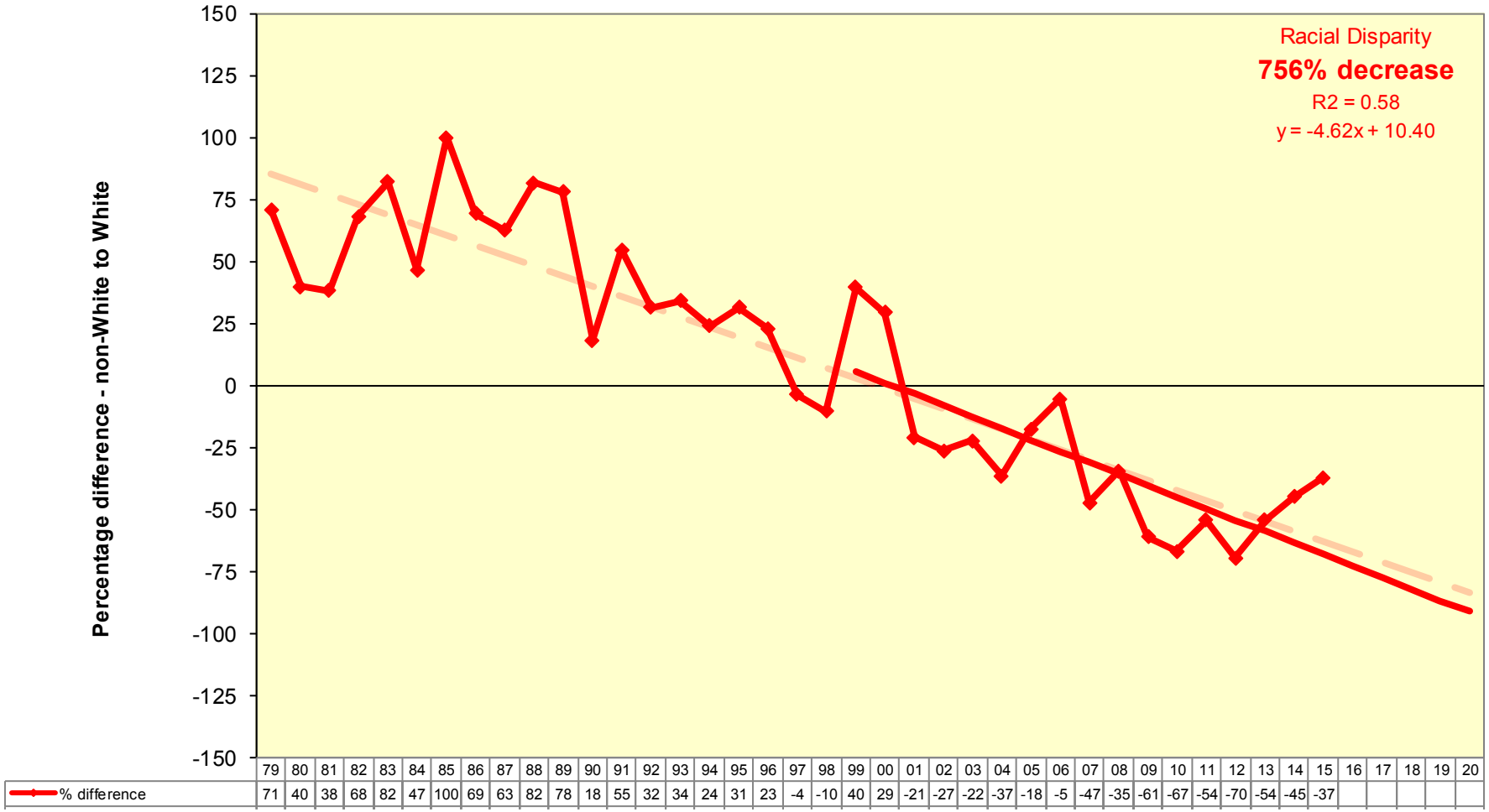
NWM	WM	NWF	WF	
	43% GT	54% LT	16% LT	NWM
30% LT		68% LT	41% LT	WM
117% GT	211% GT		84% GT	NWF
18% GT	69% GT	46% LT		WF

Figure 6.5 iv. All Other Unintentional Injuries and Adverse Effects: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	43	44	36	36	46	35	40	39	34	44	40	26	30	29	28	26	26	26	19	20	29	28	19	18	23	21	24	26	20	23	22	20	23	22	22	24	27					
W	25	32	26	21	25	24	20	23	21	24	22	22	20	22	21	21	20	21	20	23	21	22	23	23	28	28	29	27	29	31	35	34	35	37	33	34	36					

Figure 6.5 v. All Other Unintentional Injuries and Adverse Effects: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



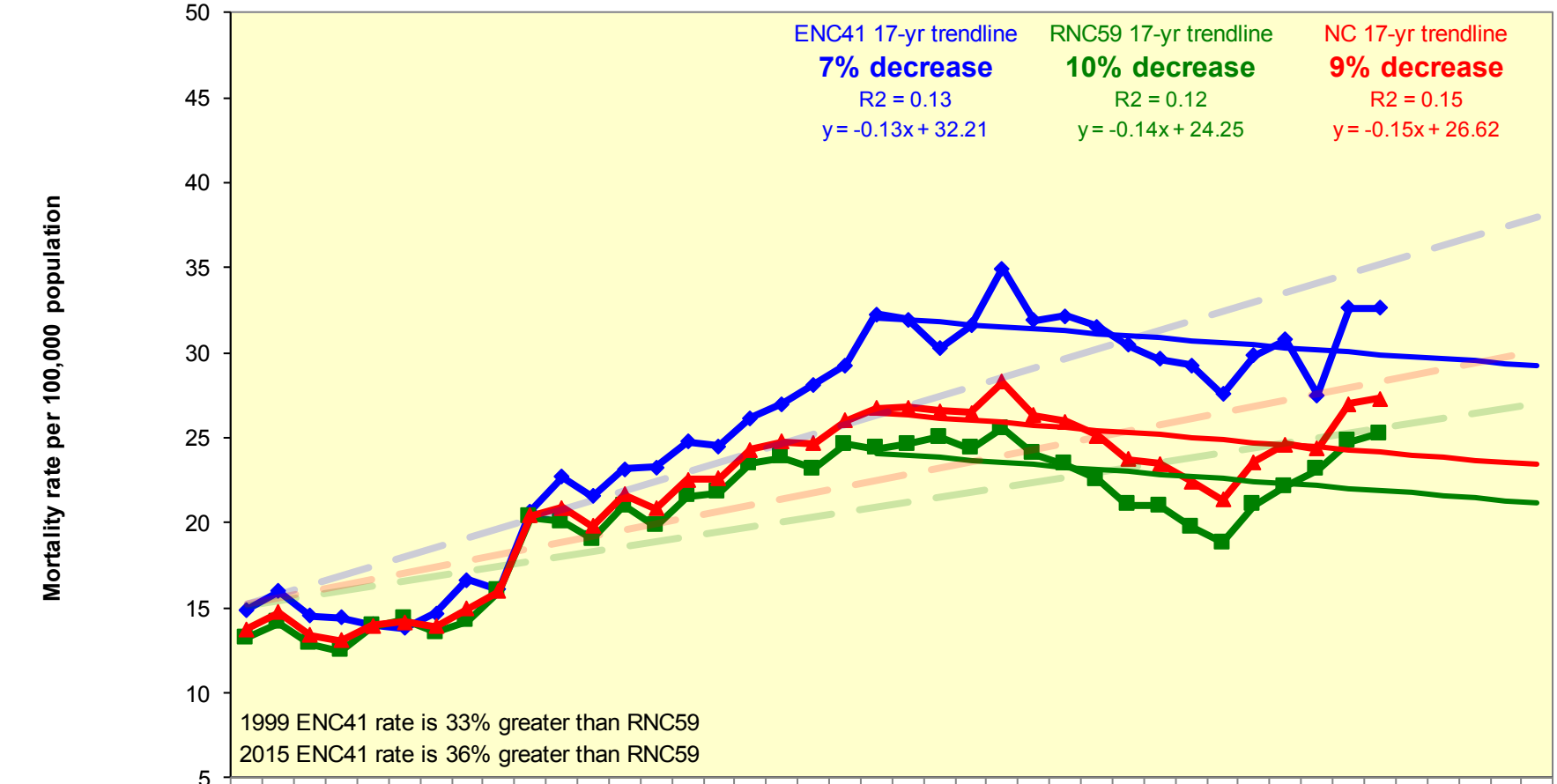
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	71	40	38	68	82	47	100	69	63	82	78	18	55	32	34	24	31	23	-4	-10	40	29	-21	-27	-22	-37	-18	-5	-47	-35	-61	-67	-54	-70	-54	-45	-37					

Diabetes Mellitus

- According to the 17-year trend, all diabetes mellitus mortality rates are decreasing but the rate of decline is less for ENC suggesting a divergence from RNC and NC. In 1999 ENC was 33% greater than RNC. In 2015, the rate trend for ENC was 36% greater than RNC.
- The 17-year trend for age-adjusted diabetes mellitus mortality rates shows a decrease of 26% for ENC. In 2015, the ENC age-adjusted diabetes mellitus rate trend remained 37% greater than RNC and 32% greater than the US.
- Rates for all subgroups are decreasing over the recent 17-year period. Rates for non-White males remain the highest. The rate for White males is decreasing the least (15% over 17 years).
- The non-White mortality rate trend decreased over 17 years by 29% but remain 127% greater than the White rate in 2015.
- The decreasing trend for racial disparity is moderately reliable and suggests a 14% decrease in racial disparity.

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. Diabetes Mellitus: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

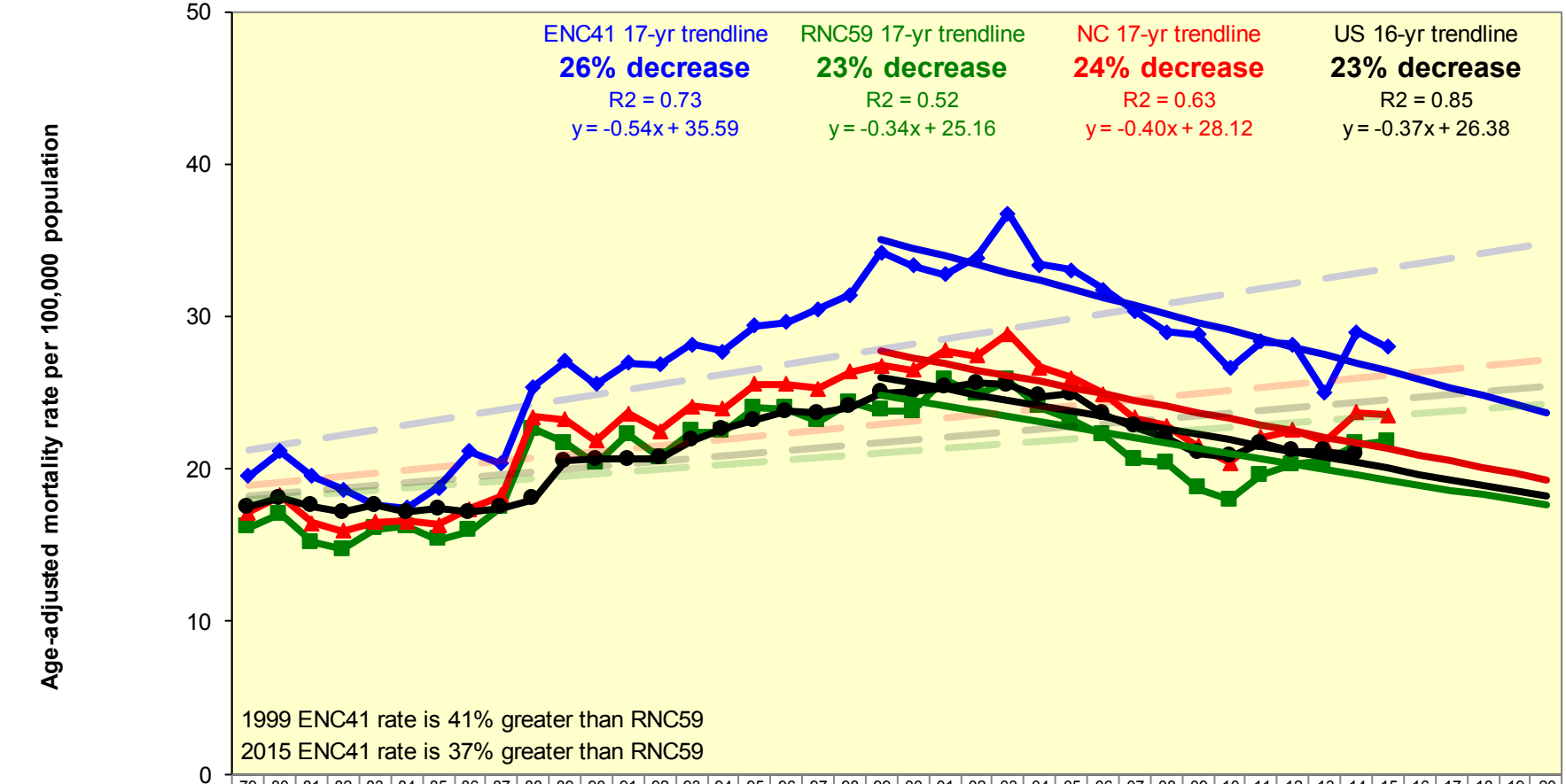


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	15	16	15	14	14	14	15	17	16	21	23	22	23	23	25	25	26	27	28	29	32	32	30	32	35	32	32	32	30	30	29	28	30	31	27	33	33					
RNC59	13	14	13	12	14	14	14	14	16	20	20	19	21	20	22	22	24	24	23	25	24	25	25	24	26	24	23	23	21	21	20	19	21	22	23	25	25					
NC	14	15	13	13	14	14	14	15	16	20	21	20	22	21	23	23	24	25	25	26	27	27	27	26	28	26	26	25	24	23	22	21	24	25	24	27	27					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	25% LT	17% LT	ENC41
33% GT		10% GT	RNC59
21% GT	9% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	27% LT	19% LT	ENC41
36% GT		10% GT	RNC59
24% GT	9% LT		NC

Figure 6.6 ii. Diabetes Mellitus: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

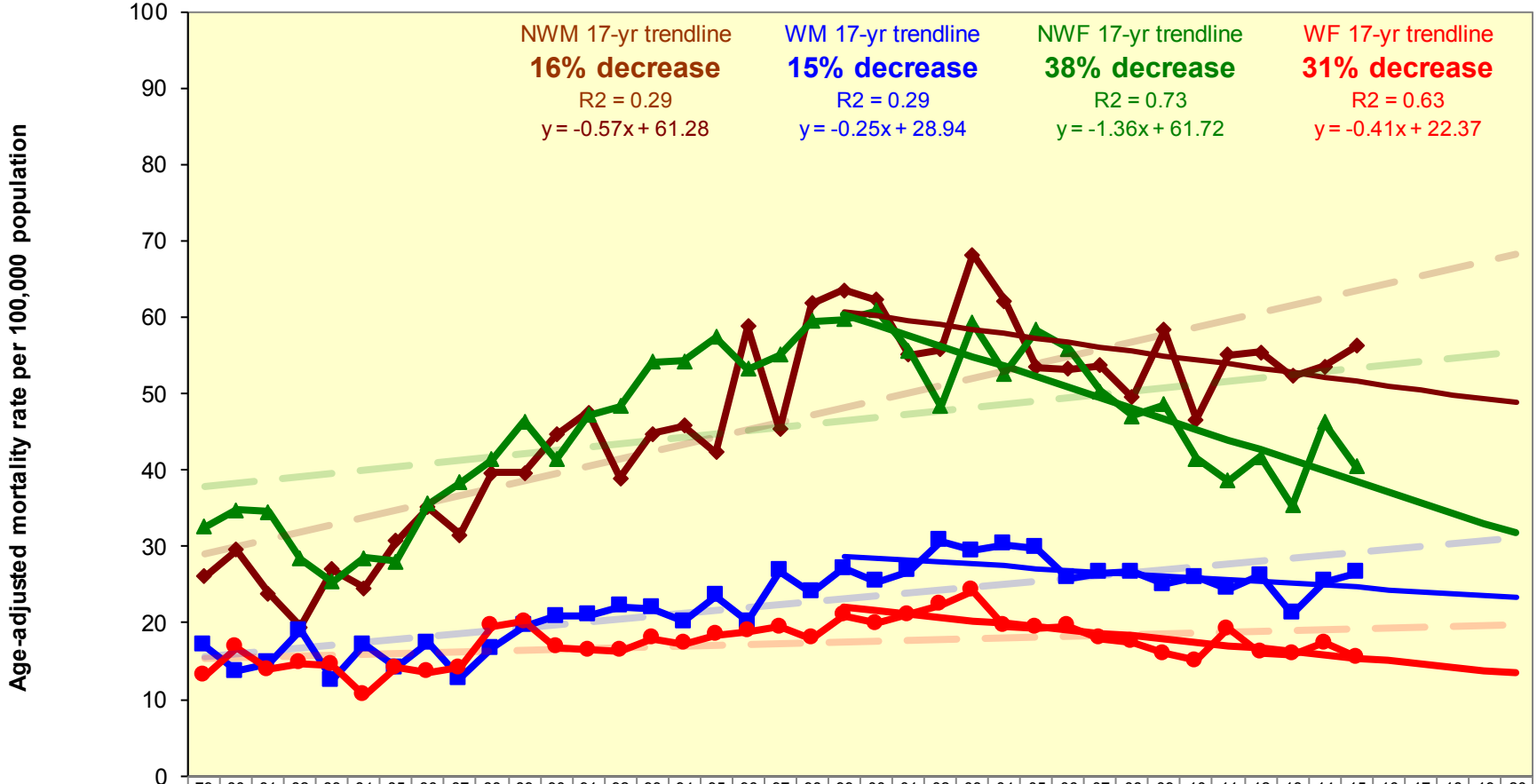


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	20	21	20	19	18	17	19	21	20	25	27	26	27	27	28	28	29	30	31	31	34	33	33	34	37	33	33	32	30	29	29	27	28	28	25	29	28					
RNC59	16	17	15	15	16	16	15	16	17	23	22	20	22	21	22	22	24	24	23	24	24	24	26	25	26	24	23	22	21	20	19	18	20	20	21	22	22					
NC	17	18	16	16	17	17	16	17	18	23	23	22	24	23	24	24	26	26	25	26	27	27	28	27	29	27	26	25	23	23	21	20	22	23	22	24	24					
US	17	18	18	17	18	17	17	17	17	18	21	21	21	21	22	23	23	24	24	24	25	25	25	26	26	25	25	24	23	22	21	21	22	21	21	21						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	29% LT	21% LT	26% LT	ENC41
41% GT		12% GT	5% GT	RNC59
27% GT	11% LT		6% LT	NC
35% GT	5% LT	7% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	27% LT	19% LT	24% LT	ENC41
37% GT		10% GT	4% GT	RNC59
24% GT	9% LT		6% LT	NC
32% GT	4% LT	6% GT		US

Figure 6.6 iii. Diabetes Mellitus: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	26	30	24	19	27	25	31	35	32	40	40	45	48	39	45	46	42	59	45	62	64	62	55	56	68	62	54	53	54	49	58	47	55	55	52	54	56					
WM	17	14	15	19	13	17	14	17	13	17	20	21	21	22	22	20	24	20	27	24	27	25	27	31	29	30	30	26	27	27	25	26	25	26	21	25	27					
NWF	33	35	35	28	25	29	28	36	38	41	46	41	47	48	54	54	57	53	55	60	60	61	56	48	59	53	58	56	50	47	49	42	39	42	35	46	40					
WF	13	17	14	15	14	11	14	14	14	20	20	17	16	16	18	17	18	19	19	18	21	20	21	22	24	20	19	20	18	17	16	15	19	16	16	17	16					

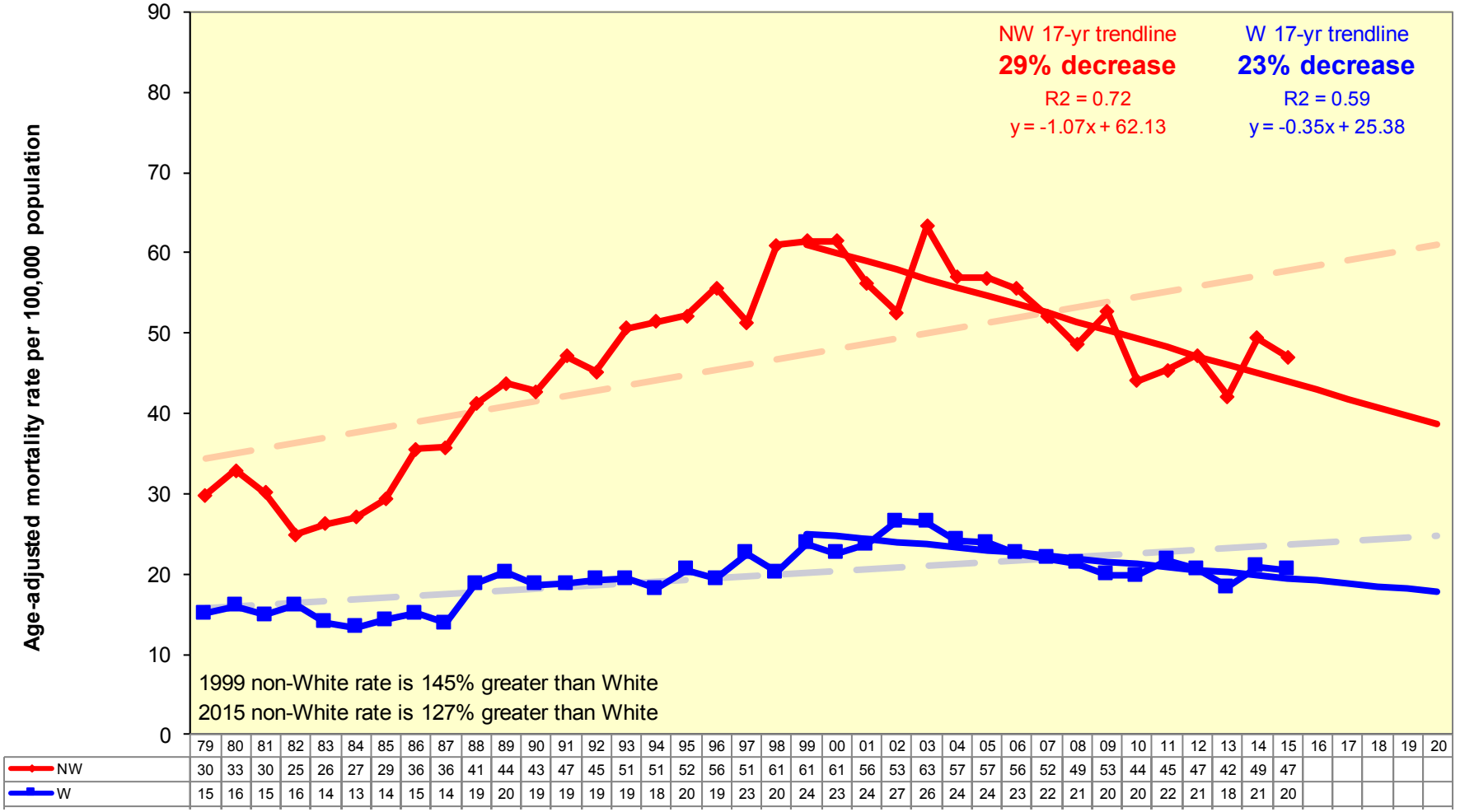
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	53% LT	1% GT	63% LT	NWM
112% GT		113% GT	23% LT	WM
1% LT	53% LT		64% LT	NWF
174% GT	29% GT	176% GT		WF

Comparison of Fitted Rates in 2015

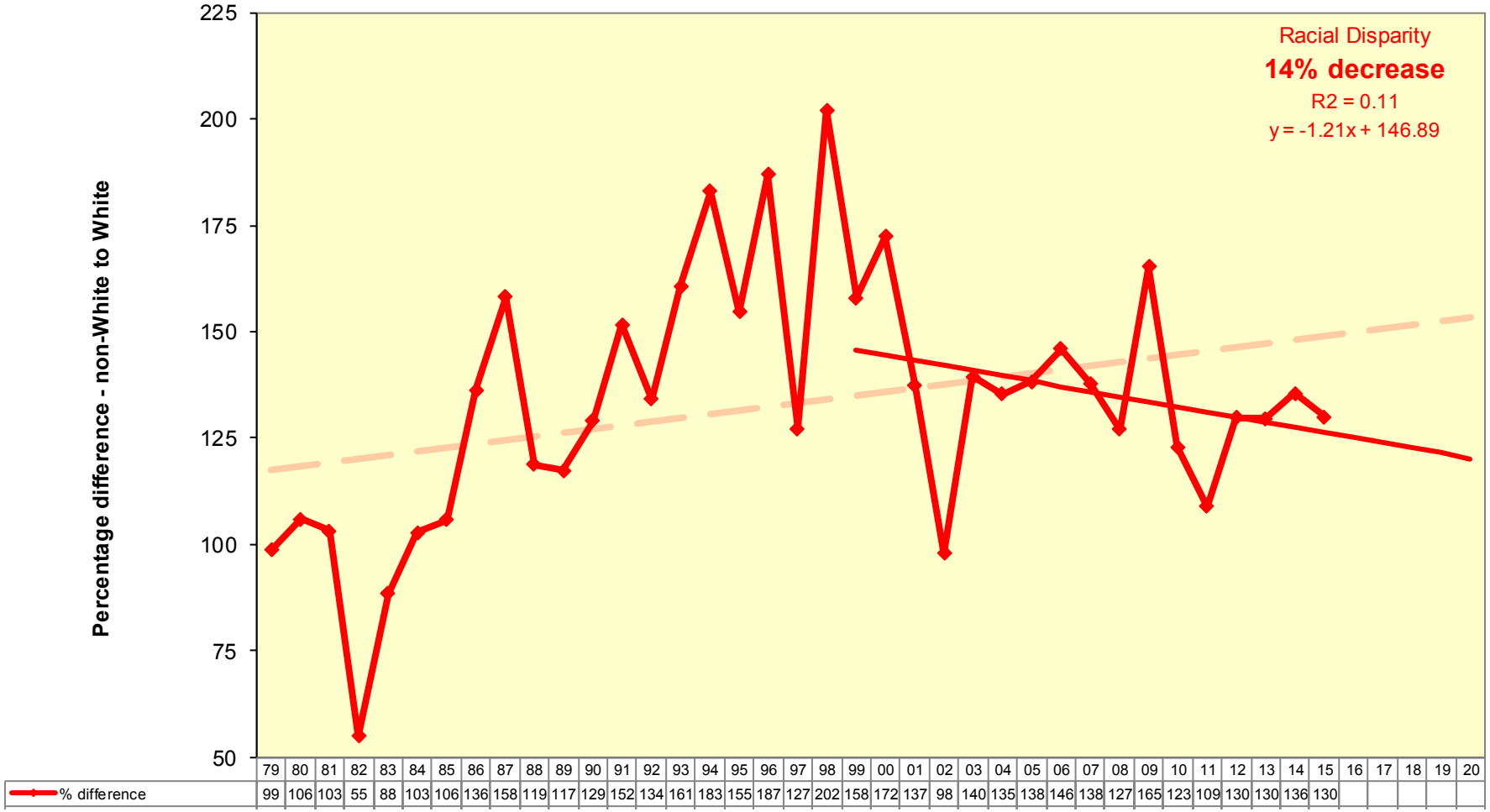
NWM	WM	NWF	WF	
	52% LT	24% LT	70% LT	NWM
110% GT		60% GT	36% LT	WM
31% GT	38% LT		60% LT	NWF
229% GT	57% GT	152% GT		WF

Figure 6.6 iv. Diabetes Mellitus:
Trends in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	30	33	30	25	26	27	29	36	36	41	44	43	47	45	51	51	52	56	51	61	61	61	56	53	63	57	57	56	52	49	53	44	45	47	42	49	47					
W	15	16	15	16	14	13	14	15	14	19	20	19	19	19	19	18	20	19	23	20	24	23	24	27	26	24	24	23	22	21	20	20	22	21	18	21	20					

Figure 6.6 v. Diabetes Mellitus:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020

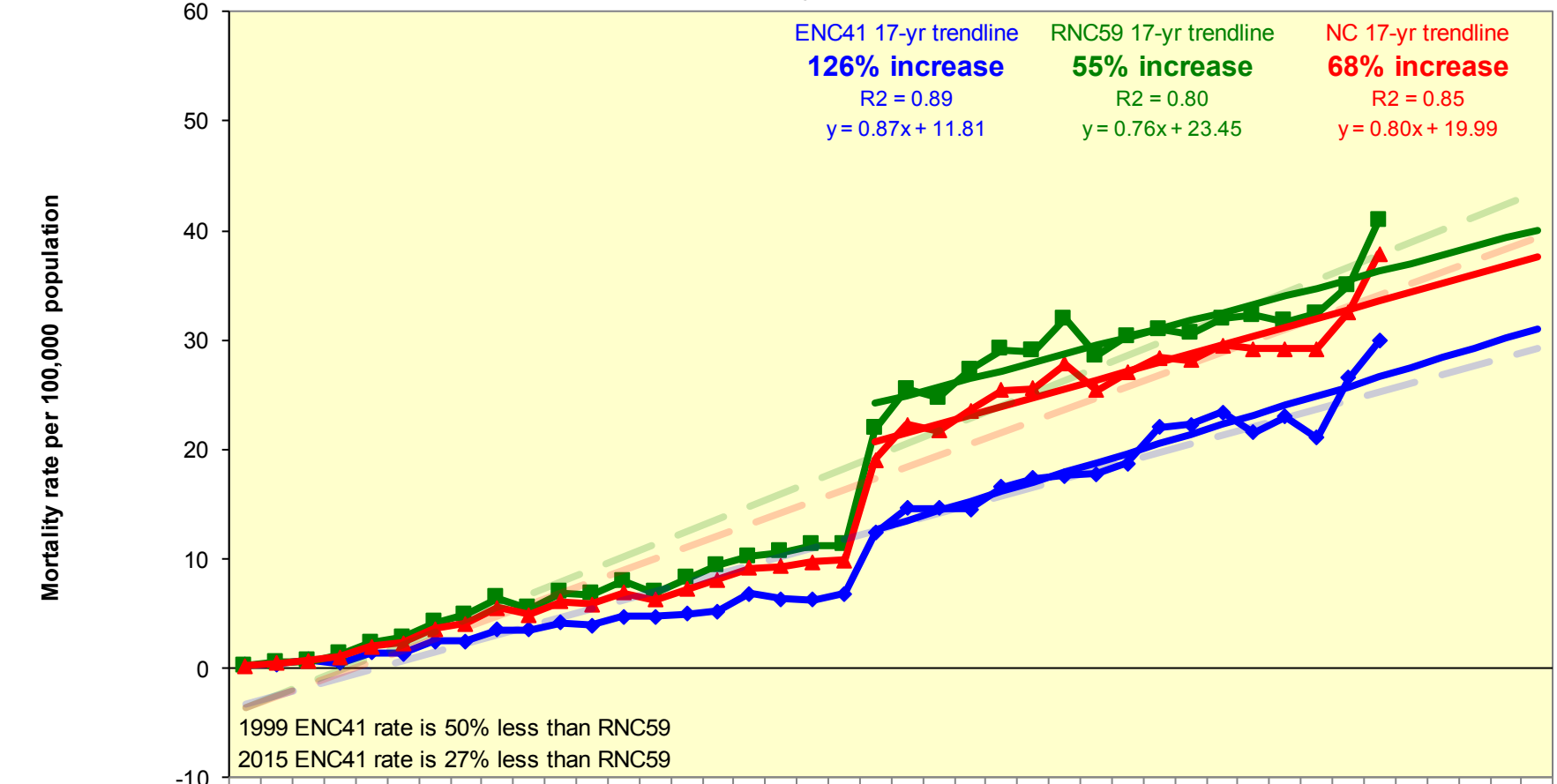


Alzheimer's Disease

- The Alzheimer's mortality rate for ENC shows a 126% increase over the 17-year period. ENC's rate of increase was larger than RNC (55%) and NC (68%) but the rate trend for ENC still remains 27% less than RNC.
- In 2015, the age-adjusted rate trend for ENC is even with the US rate and has increased 66% over the 17 years. This is a larger increase than both RNC and NC (33% and 40% respectively), although those rates are higher.
- The mortality rates for females, both White and non-White, are greater than that of non-White and White males. All the rates are increasing over the 17-year trend.
- The non-White mortality rate for Alzheimer's has increased 126% over the 17-year trend, and has converged with the White rate.
- The racial disparity has shifted and now favors Whites.

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. Alzheimer's Disease: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

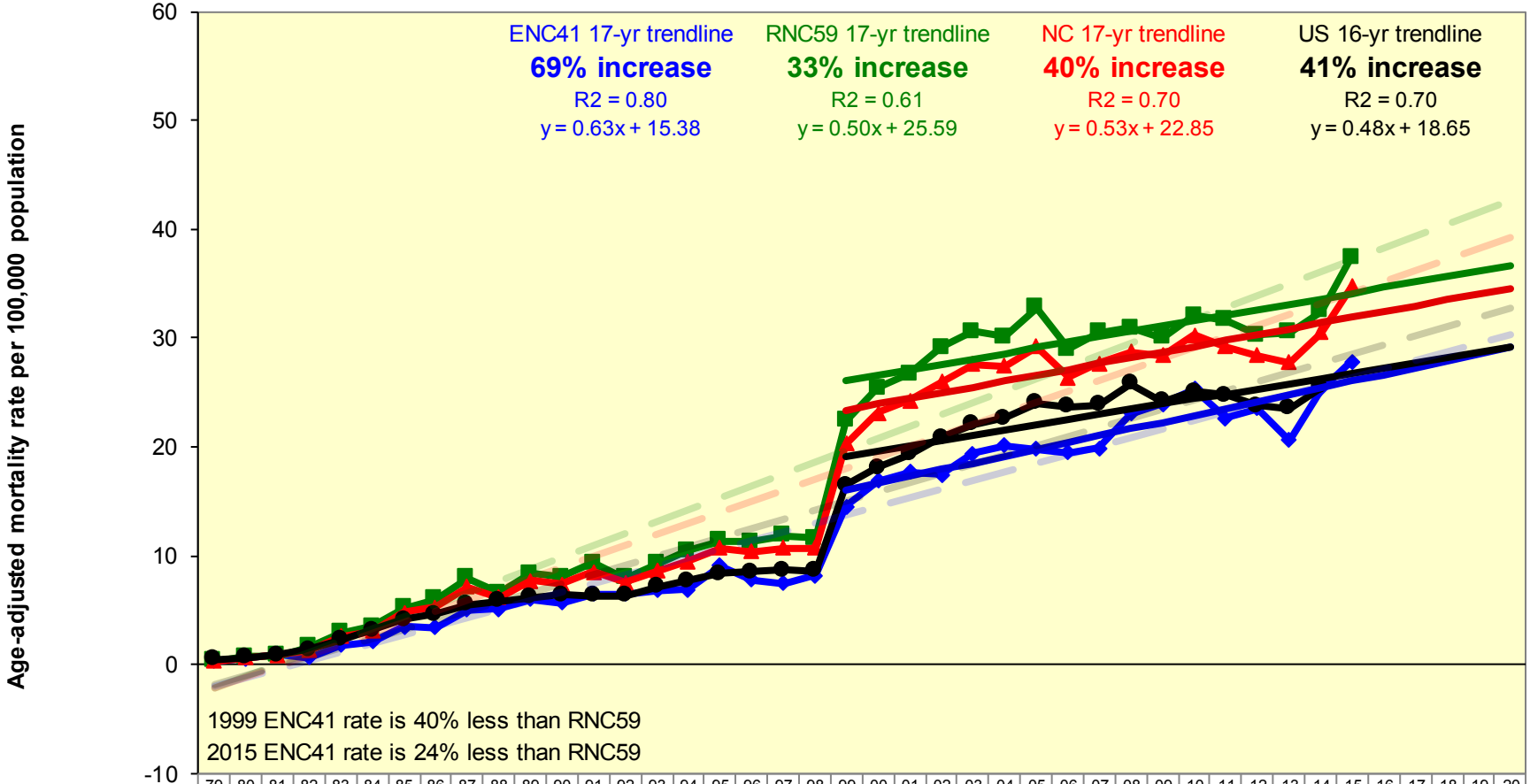


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	0	0	1	0	1	1	2	2	4	4	4	4	5	5	5	5	7	6	6	7	12	15	15	15	17	17	18	18	19	22	22	23	22	23	21	27	30					
RNC59	0	1	1	1	2	3	4	5	6	5	7	7	8	7	8	9	10	11	11	11	22	26	25	27	29	29	32	29	30	31	31	32	32	32	32	35	41					
NC	0	1	1	1	2	2	4	4	6	5	6	6	7	6	7	8	9	9	10	10	19	22	22	24	25	26	28	25	27	28	28	30	29	29	29	33	38					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	99% GT	69% GT	ENC41
50% LT		15% LT	RNC59
41% LT	17% GT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	38% GT	27% GT	ENC41
27% LT		8% LT	RNC59
21% LT	8% GT		NC

Figure 6.7 ii. Alzheimer's Disease: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

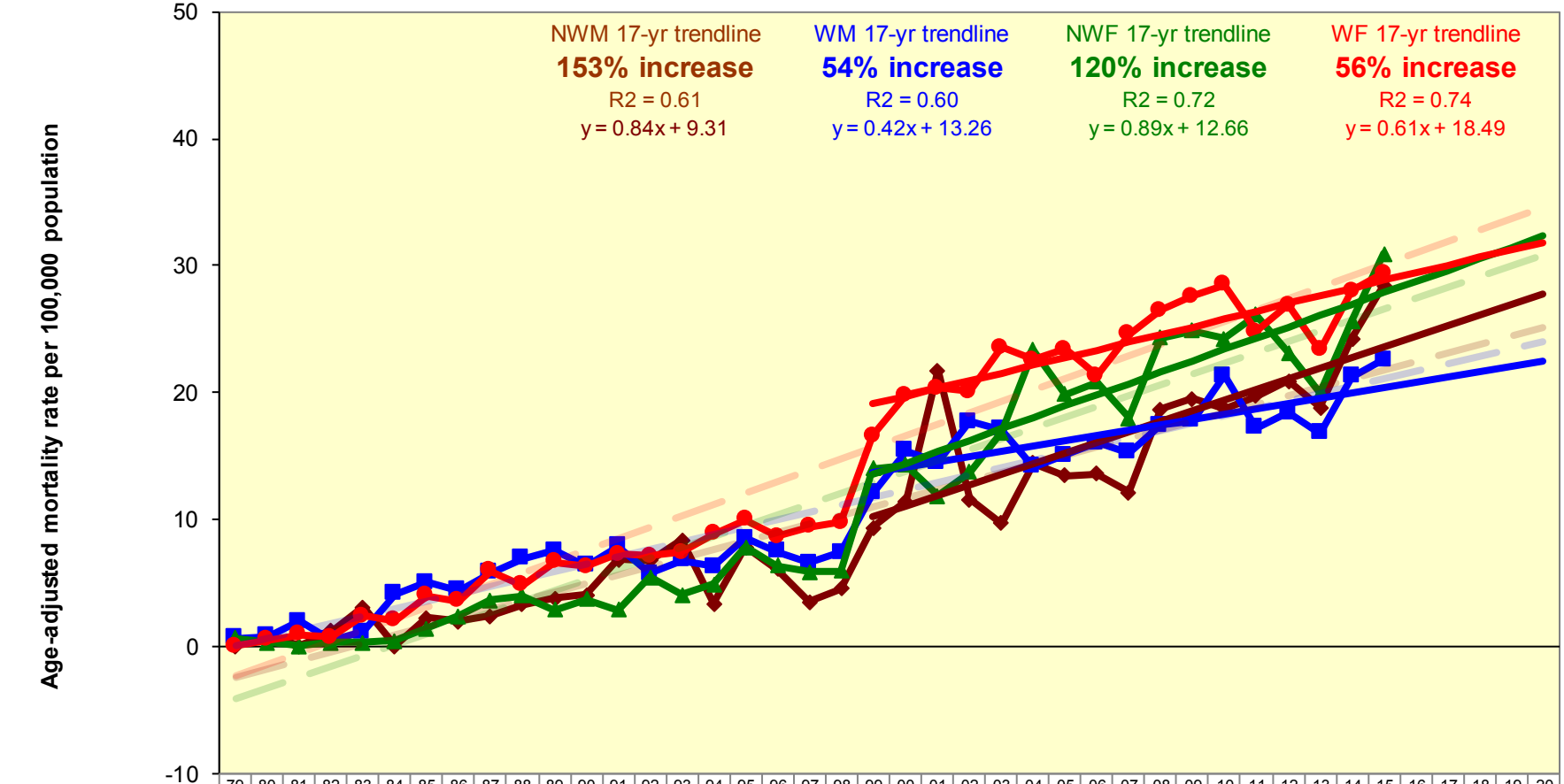


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	0	1	1	1	2	2	4	3	5	5	6	6	6	6	7	7	9	8	7	8	14	17	18	17	19	20	20	19	20	23	24	25	23	24	21	25	28					
RNC59	0	1	1	2	3	3	5	6	8	7	8	8	9	8	9	10	11	11	12	12	22	25	27	29	31	30	33	29	31	31	30	32	32	30	30	32	37					
NC	0	1	1	1	3	3	5	5	7	6	8	7	9	8	9	9	11	10	11	11	20	23	24	26	28	27	29	26	28	29	28	30	29	28	28	30	35					
US	0	1	1	1	2	3	4	5	5	6	6	6	6	6	7	8	8	8	9	9	16	18	19	21	22	23	24	24	24	26	24	25	25	24	24	25						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	66% GT	49% GT	21% GT	ENC41
40% LT		11% LT	27% LT	RNC59
33% LT	12% GT		18% LT	NC
18% LT	37% GT	23% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	32% GT	24% GT	4% GT	ENC41
24% LT		7% LT	22% LT	RNC59
19% LT	7% GT		16% LT	NC
3% LT	28% GT	19% GT		US

Figure 6.7 iii. Alzheimer's Disease: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	0	1	0	1	3	0	2	2	2	3	4	4	7	7	8	3	8	6	4	5	9	11	22	12	10	14	13	14	12	19	19	19	20	21	19	24	28					
WM	1	1	2	1	1	4	5	4	6	7	8	6	8	6	7	6	8	7	7	7	12	15	15	18	17	14	15	16	15	17	18	21	17	18	17	21	23					
NWF	1	0	0	0	0	0	1	2	4	4	3	4	3	5	4	5	8	6	6	6	14	14	12	14	17	23	20	21	18	24	25	24	26	23	20	26	31					
WF	0	0	1	1	2	2	4	4	6	5	7	6	7	7	7	9	10	9	9	10	17	20	20	20	24	23	23	21	25	26	28	28	25	27	23	28	29					

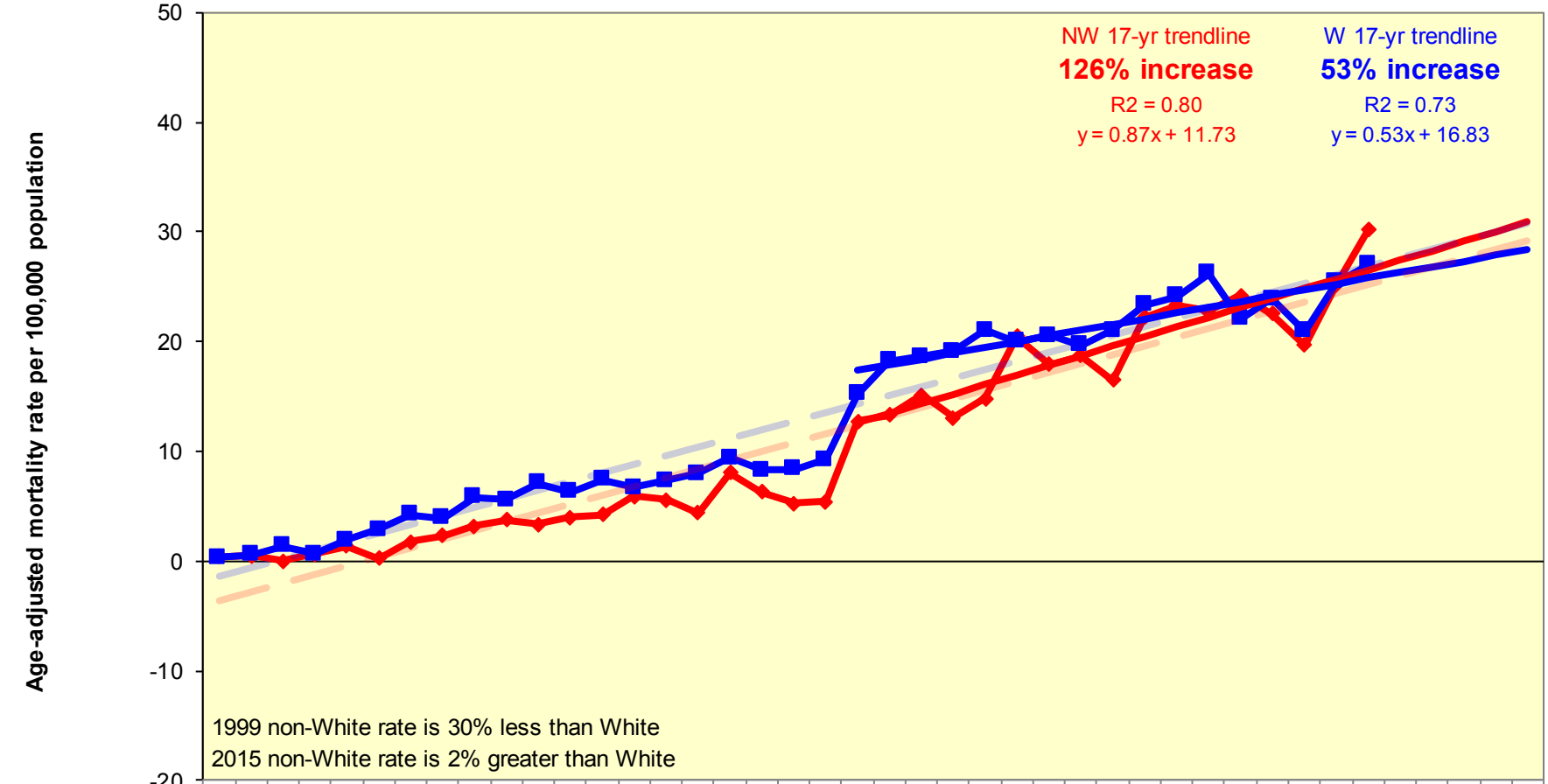
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	42% GT	36% GT	98% GT	NWM
30% LT		5% LT	39% GT	WM
26% LT	5% GT		46% GT	NWF
50% LT	28% LT	31% LT		WF

Comparison of Fitted Rates in 2015

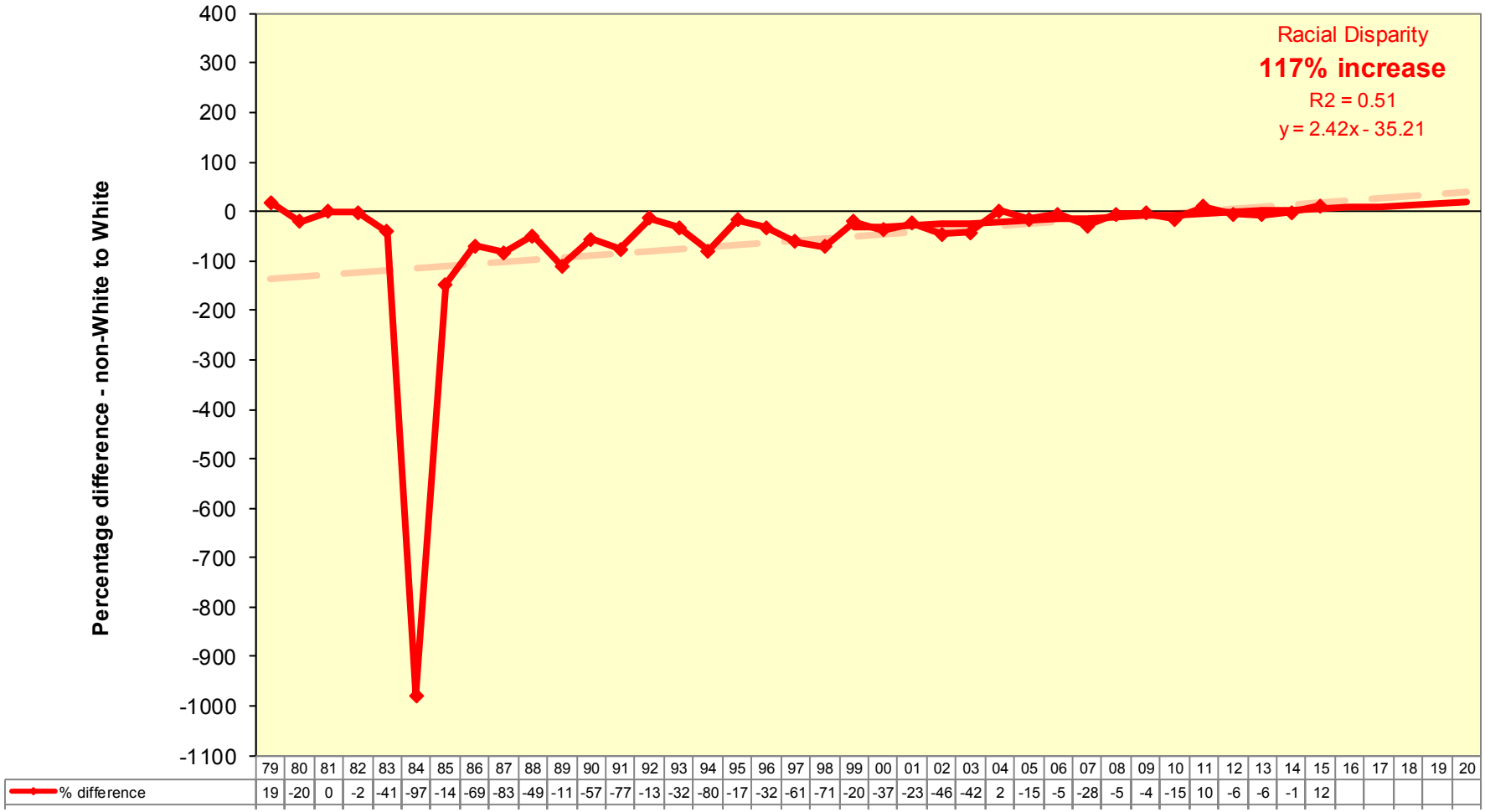
NWM	WM	NWF	WF	
	12% LT	19% GT	24% GT	NWM
14% GT		35% GT	41% GT	WM
16% LT	26% LT		5% GT	NWF
20% LT	29% LT	4% LT		WF

Figure 6.7 iv. Alzheimer's Disease:
Trends in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	0	0	0	1	1	0	2	2	3	4	3	4	4	6	6	4	8	6	5	5	13	13	15	13	15	20	18	19	16	22	23	23	24	23	20	25	30					
W	0	1	1	1	2	3	4	4	6	6	7	6	7	7	7	8	9	8	8	9	15	18	19	19	21	20	21	20	21	23	24	26	22	24	21	25	27					

Figure 6.7 v. Alzheimer's Disease:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



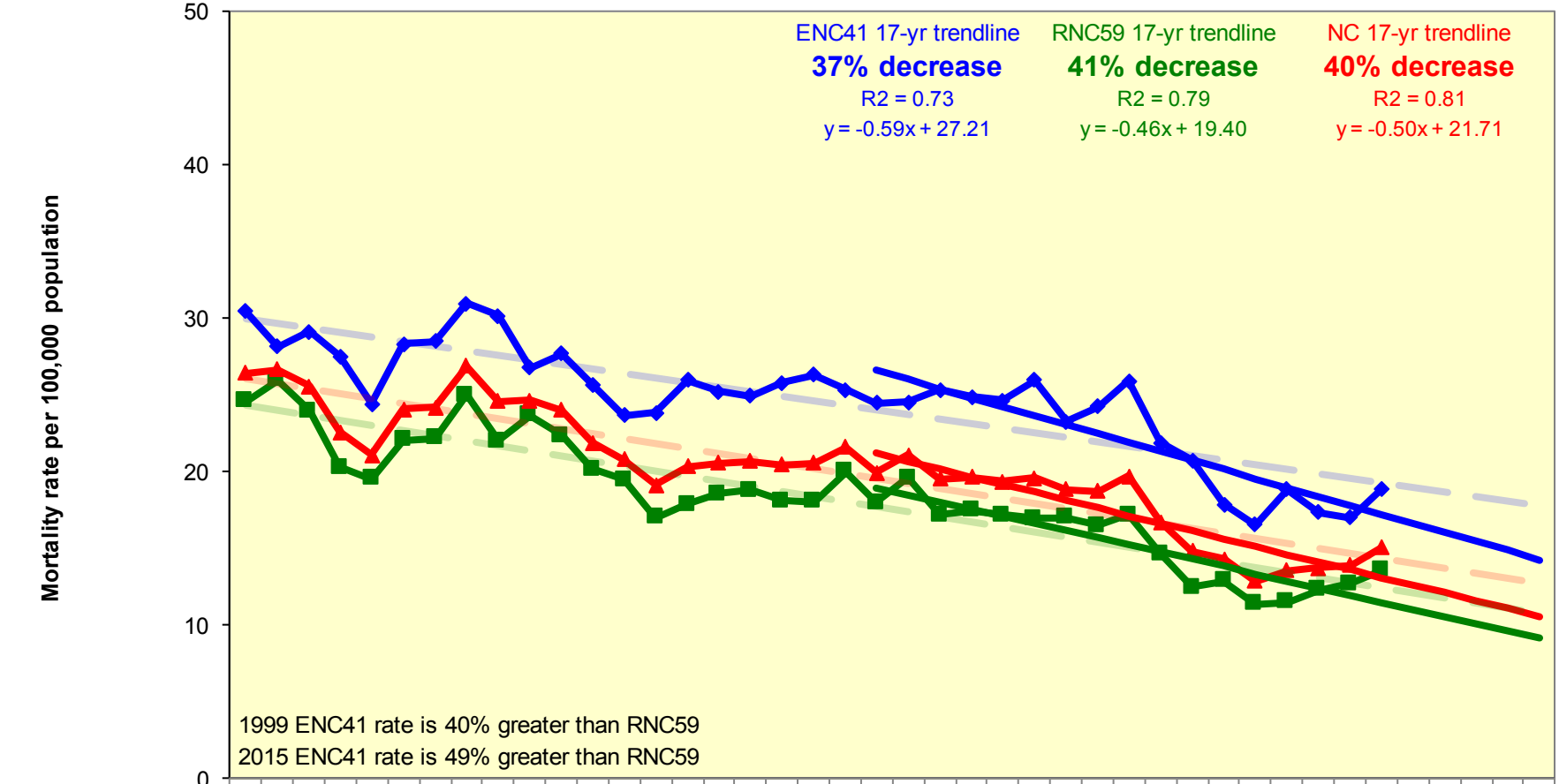
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	19	-20	0	-2	-41	-97	-14	-69	-83	-49	-11	-57	-77	-13	-32	-80	-17	-32	-61	-71	-20	-37	-23	-46	-42	2	-15	-5	-28	-5	-4	-15	10	-6	-6	-1	12					

Unintentional Motor Vehicle Injuries

- ENC's unintentional motor vehicle mortality rate trend is decreasing but is still 49% greater than RNC in 2015.
- The ENC age-adjusted rate trend is 50% greater than RNC and 65% greater than the US. Rates for ENC, RNC, and NC are all decreasing.
- The rate for non-White males is the highest, and has ticked up. The 17-year trend rates for all groups are declining. The trend rate for White females is the lowest and has decreased the most (42% over 17 years).
- The non-White rate has increased for the last 2 years. Rate trends for Whites and non-Whites have decreased over the 17-year period.
- The racial disparity is increasing in a moderately reliable trend.

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. Unintentional Motor Vehicle Injuries: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

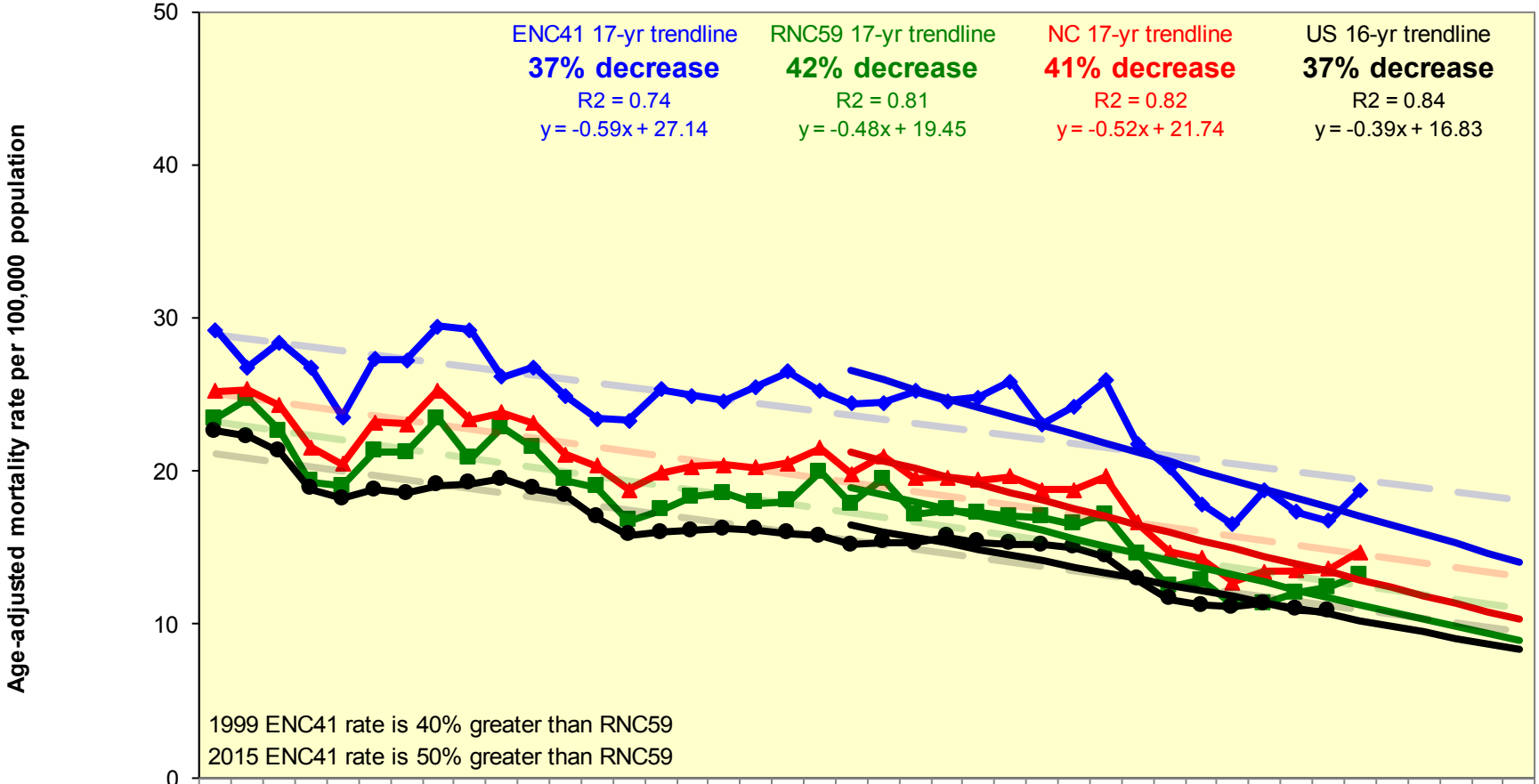


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	30	28	29	28	24	28	29	31	30	27	28	26	24	24	26	25	25	26	26	25	24	25	25	25	25	26	23	24	26	22	21	18	17	19	17	17	19					
RNC59	25	26	24	20	20	22	22	25	22	24	22	20	20	17	18	19	19	18	18	20	18	20	17	18	17	17	17	17	17	15	13	13	11	11	12	13	14					
NC	26	27	26	23	21	24	24	27	25	25	24	22	21	19	20	21	21	20	21	22	20	21	20	20	19	20	19	19	20	17	15	14	13	14	14	14	15					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	29% LT	20% LT	ENC41
40% GT		12% GT	RNC59
25% GT	11% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	33% LT	23% LT	ENC41
49% GT		14% GT	RNC59
31% GT	12% LT		NC

Figure 6.8 ii. Unintentional Motor Vehicle Injuries: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

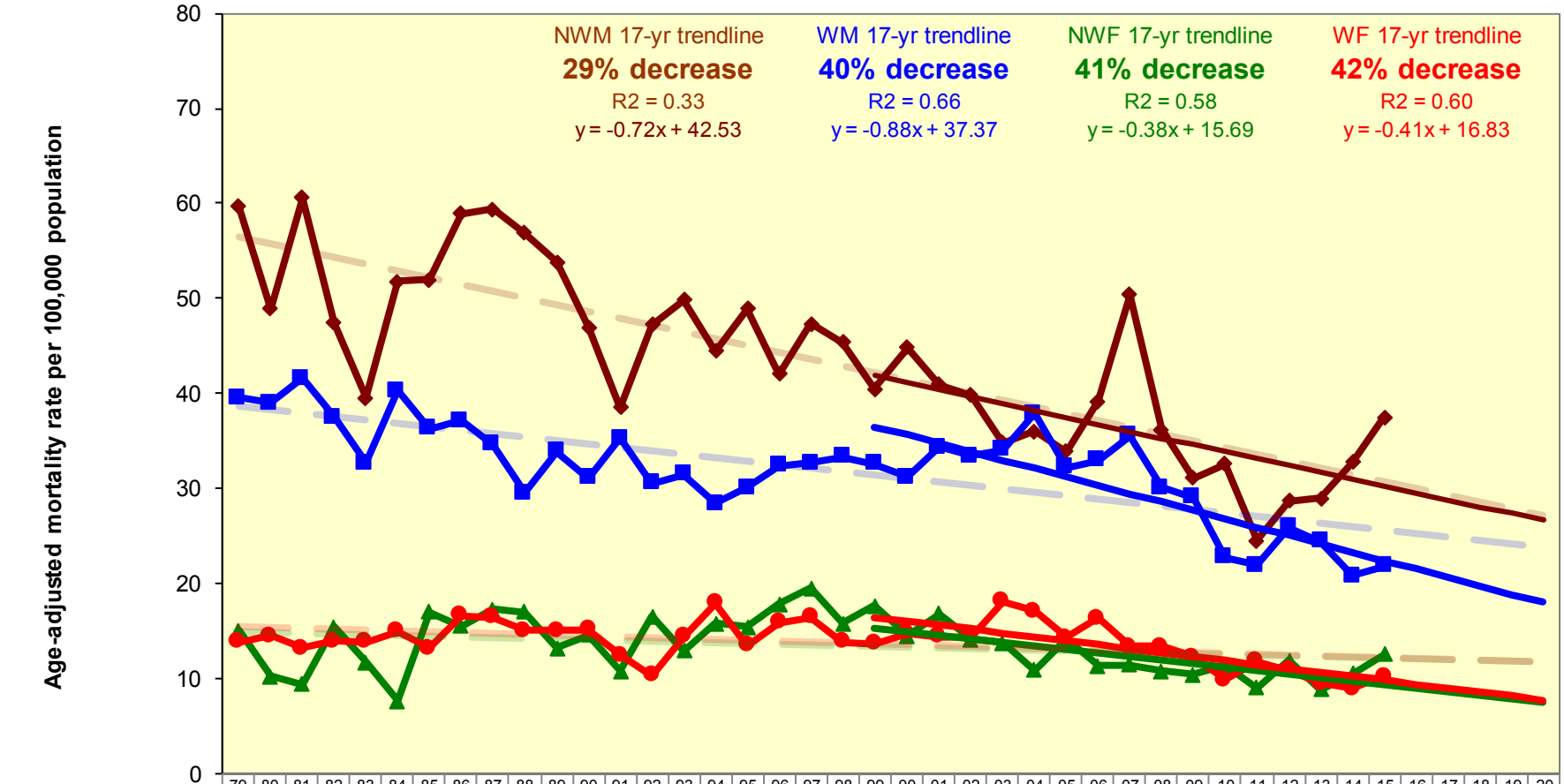


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	29	27	28	27	24	27	27	29	29	26	27	25	23	23	25	25	25	26	27	25	24	24	25	25	25	26	23	24	26	22	20	18	16	19	17	17	19					
RNC59	23	25	23	19	19	21	21	23	21	23	22	19	19	17	17	18	19	18	18	20	18	19	17	17	17	17	17	17	17	15	12	13	11	11	12	12	13					
NC	25	25	24	22	20	23	23	25	23	24	23	21	20	19	20	20	20	20	21	22	20	21	20	20	19	20	19	19	20	17	15	14	13	13	13	14	15					
US	23	22	21	19	18	19	19	19	19	19	19	18	17	16	16	16	16	16	16	16	15	15	15	16	15	15	15	15	14	13	12	11	11	11	11	11						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	28% LT	20% LT	38% LT	ENC41
40% GT		12% GT	13% LT	RNC59
25% GT	11% LT		23% LT	NC
61% GT	16% GT	29% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	33% LT	24% LT	40% LT	ENC41
50% GT		14% GT	9% LT	RNC59
32% GT	12% LT		21% LT	NC
65% GT	10% GT	26% GT		US

Figure 6.8 iii. Unintentional Motor Vehicle Injuries: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

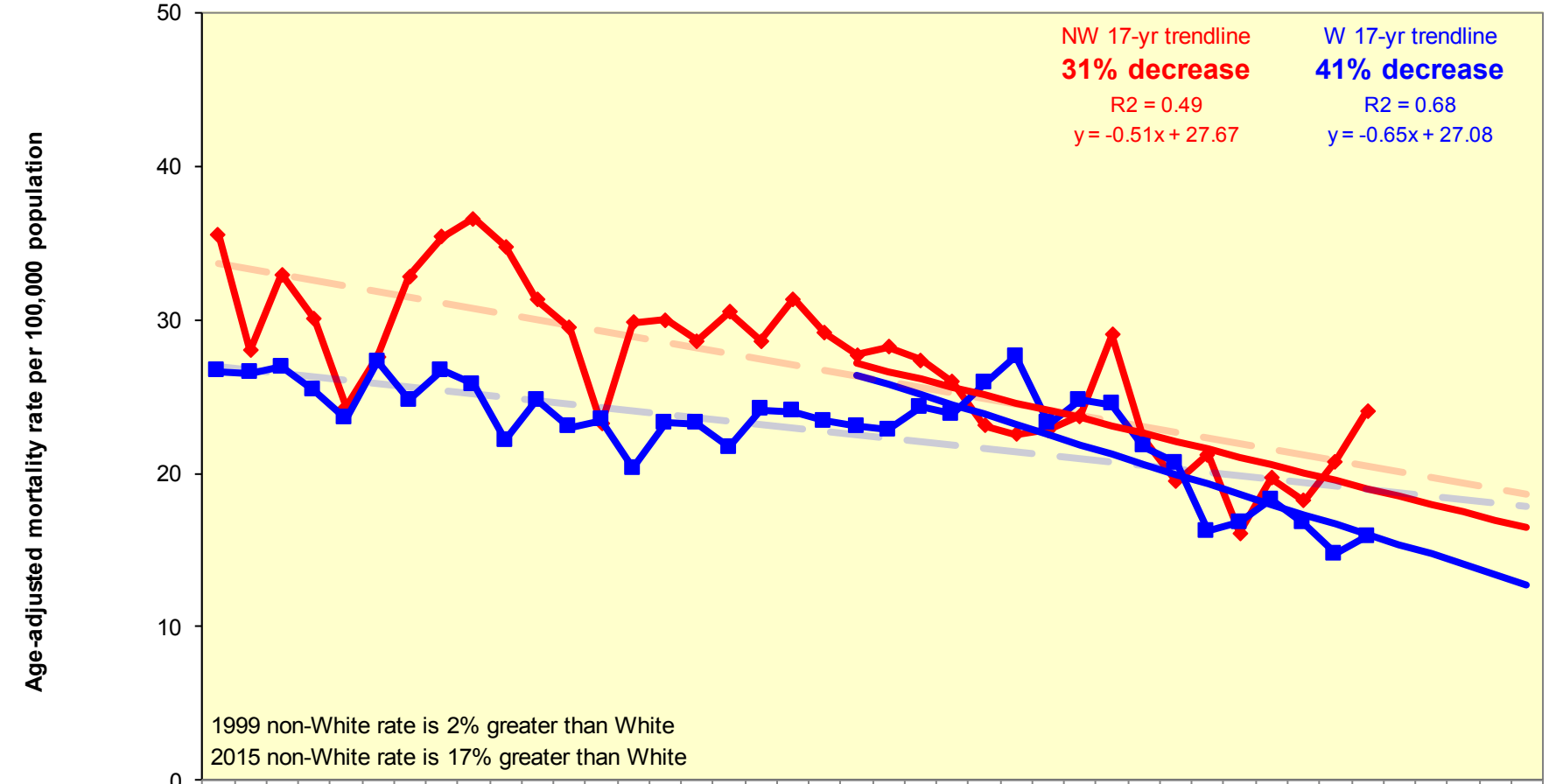


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	60	49	61	47	39	52	52	59	59	57	54	47	38	47	50	44	49	42	47	45	40	45	41	40	35	36	34	39	50	36	31	33	25	29	29	33	37					
WM	40	39	42	38	33	40	36	37	35	29	34	31	35	31	31	28	30	32	33	33	33	31	34	33	34	38	32	33	36	30	29	23	22	26	24	21	22					
NWF	15	10	9	15	12	8	17	15	17	17	13	15	11	16	13	16	15	18	19	16	18	14	17	14	14	11	14	11	11	11	10	11	9	12	9	10	13					
WF	14	14	13	14	14	15	13	17	16	15	15	15	12	10	14	18	13	16	16	14	14	15	14	14	18	17	14	16	13	13	12	10	12	11	9	9	10					

Comparison of Fitted Rates in 1999					
NWM	WM	NWF	WF		
	12% LT	63% LT	60% LT	NWM	
14% GT		58% LT	55% LT	WM	
171% GT	138% GT		7% GT	NWF	
153% GT	122% GT	7% LT		WF	

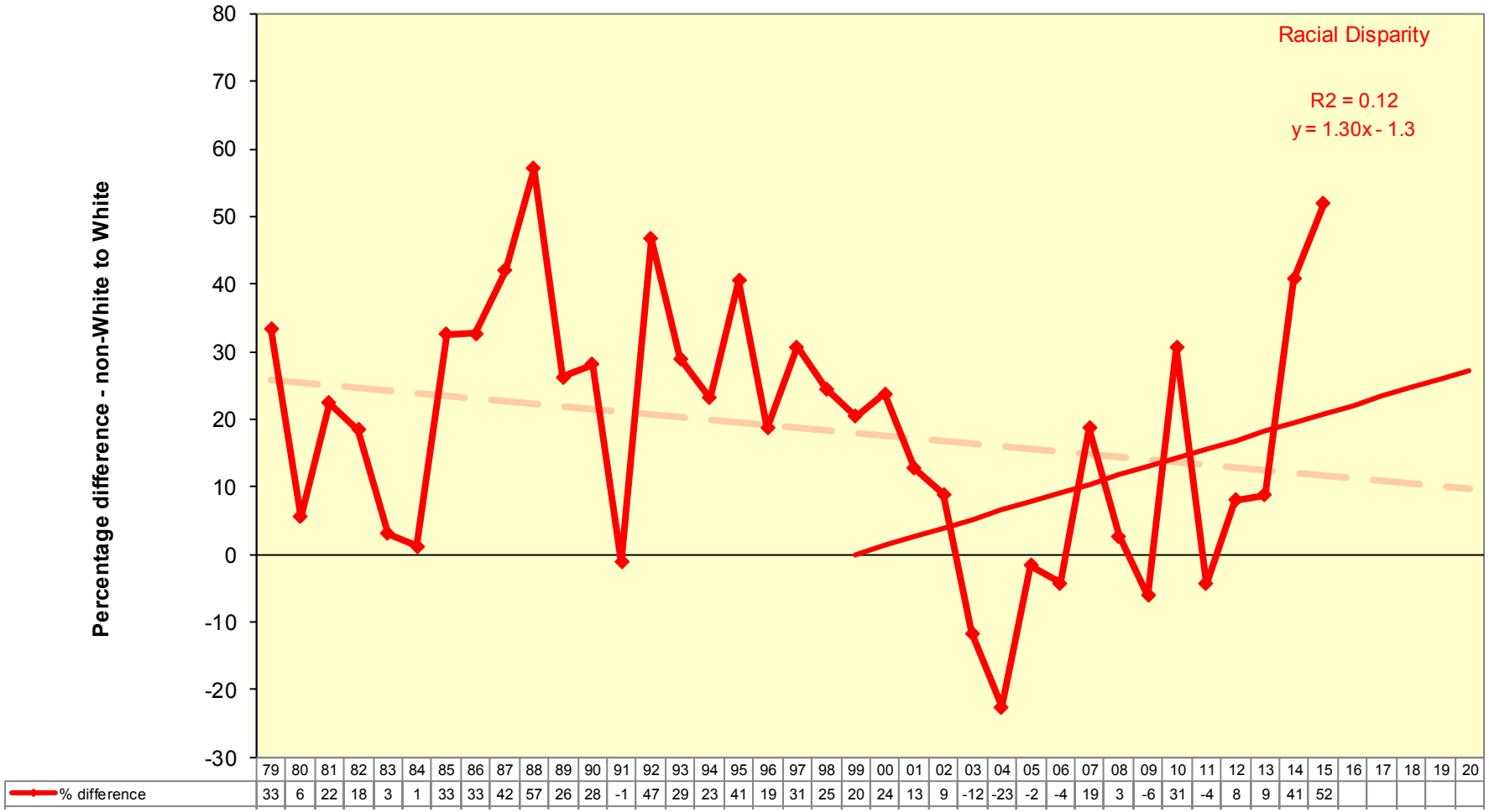
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	25% LT	69% LT	67% LT	NWM
33% GT		58% LT	56% LT	WM
219% GT	140% GT		5% GT	NWF
204% GT	128% GT	5% LT		WF

Figure 6.8 iv. Unintentional Motor Vehicle Injuries: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	36	28	33	30	24	28	33	35	37	35	31	29	23	30	30	29	30	29	31	29	28	28	27	26	23	23	23	24	29	22	19	21	16	20	18	21	24					
W	27	26	27	25	24	27	25	27	26	22	25	23	23	20	23	23	22	24	24	23	23	23	24	24	26	28	23	25	24	22	21	16	17	18	17	15	16					

Figure 6.8 v. Unintentional Motor Vehicle Injuries: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



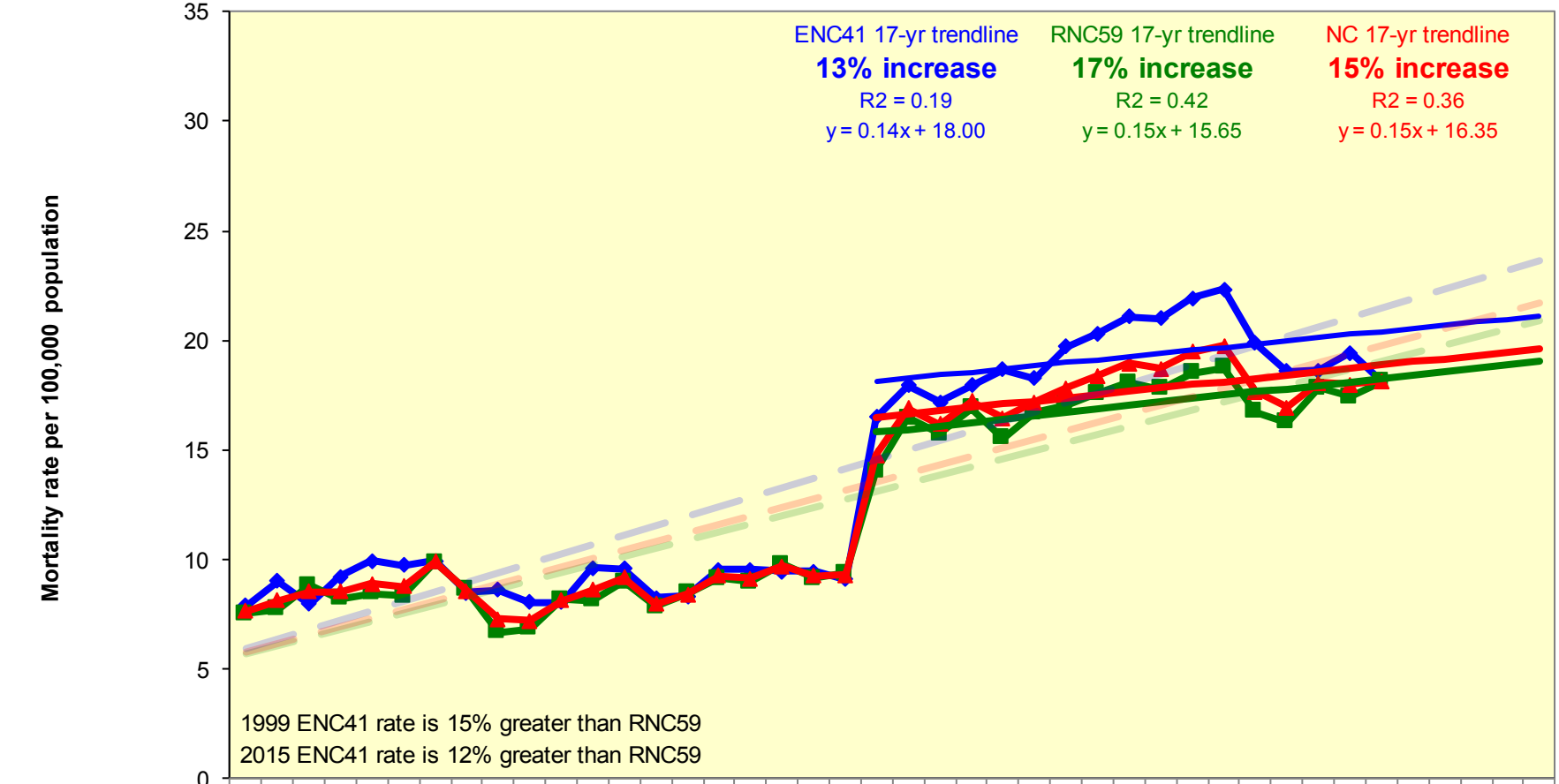
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	33	6	22	18	3	1	33	33	42	57	26	28	-1	47	29	23	41	19	31	25	20	24	13	9	-12	-23	-2	-4	19	3	-6	31	-4	8	9	41	52					

Nephritis, Nephrotic Syndrome, and Nephrosis

- Mortality due to nephritis, nephrotic syndrome, and nephrosis in ENC has increased by 13% over 17 years. The other regions have also experienced the same increase during this time period, ENC rates were 12% greater than RNC in 2015.
- With age-adjustment, ENC has flat lined in the unreliable 17-year trend.
- The 17-year trends for non-White males and females are continually above those for White males and females, although the trend for non-White males is unreliable. The demographic group with the greatest rate of decrease is non-White females, decreasing 22% over 17 years. White females have the lowest rate and the rate for White males in unreliable
- In 2015, the non-White rate trend was 113% greater than the White rate, but was declining. The White rate is unreliable.
- The trend for racial disparity is moderately reliable and suggests a 30% decrease in racial disparity.

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. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

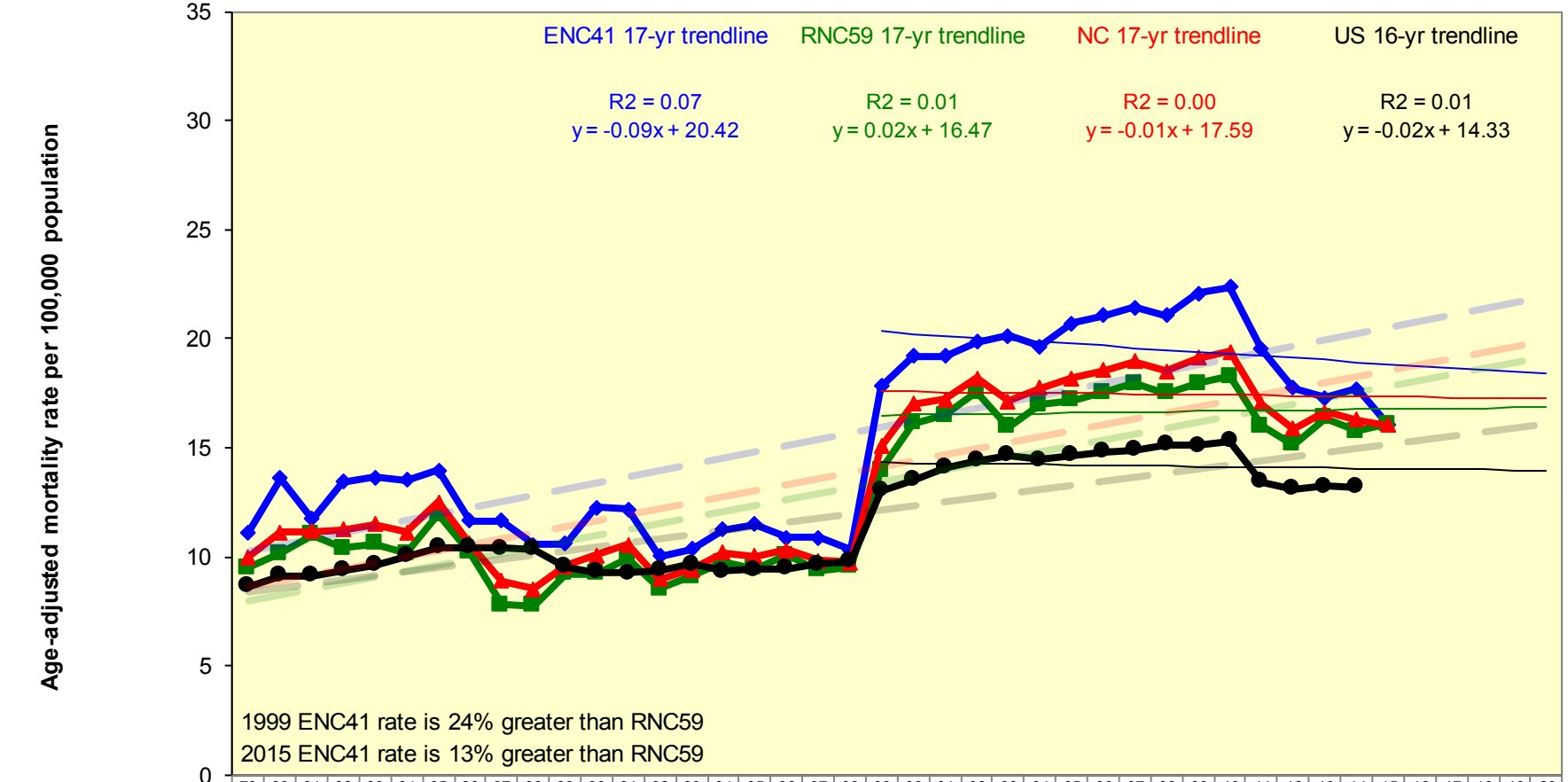


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	8	9	8	9	10	10	10	9	9	8	8	10	10	8	8	10	10	9	9	9	16	18	17	18	19	18	20	20	21	21	22	22	20	19	19	19	18					
RNC59	8	8	9	8	8	8	10	9	7	7	8	8	9	8	8	9	9	10	9	9	14	16	16	17	16	17	17	18	18	18	19	19	17	16	18	17	18					
NC	8	8	9	9	9	9	10	9	7	7	8	9	9	8	8	9	9	10	9	9	15	17	16	17	16	17	18	18	19	19	19	20	18	17	18	18	18					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	13% LT	9% LT	ENC41
15% GT		4% GT	RNC59
10% GT	4% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	11% LT	8% LT	ENC41
12% GT		3% GT	RNC59
8% GT	3% LT		NC

Figure 6.9 ii. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

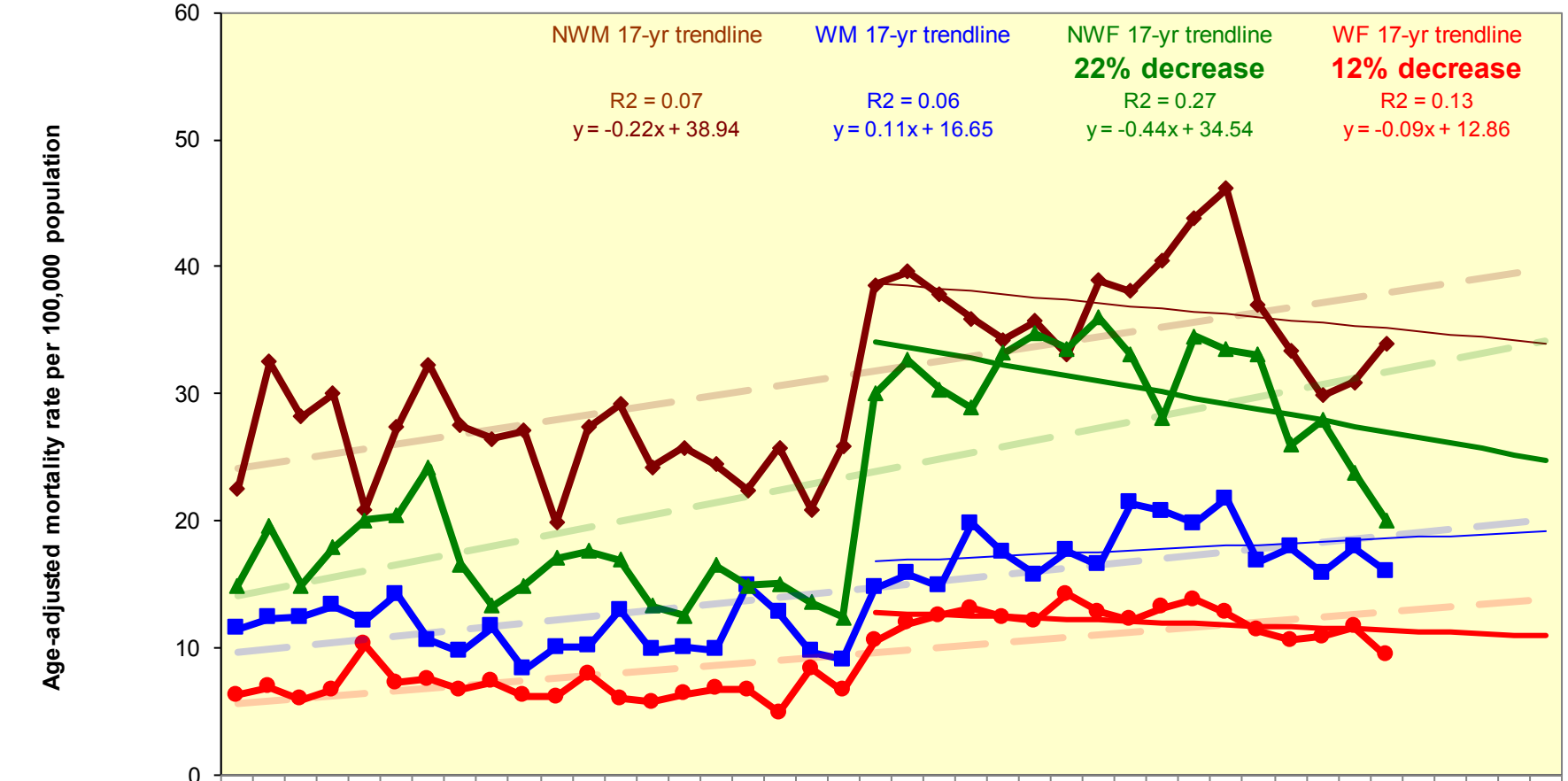


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	11	14	12	13	14	14	14	12	12	11	11	12	12	10	10	11	12	11	11	10	18	19	19	20	20	20	21	21	21	21	22	22	20	18	17	18	16					
RNC59	9	10	11	10	11	10	12	10	8	8	9	9	10	9	9	10	9	10	9	10	14	16	16	18	16	17	17	18	18	18	18	18	16	15	16	16	16					
NC	10	11	11	11	11	11	12	11	9	9	10	10	11	9	9	10	10	10	10	10	15	17	17	18	17	18	18	19	19	19	19	19	17	16	17	16	16					
US	9	9	9	9	10	10	10	10	10	10	10	9	9	9	10	9	9	9	10	10	13	13	14	14	15	14	15	15	15	15	15	15	13	13	13	13						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	19% LT	14% LT	30% LT	ENC41
24% GT		7% GT	13% LT	RNC59
16% GT	6% LT		19% LT	NC
43% GT	15% GT	23% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	12% LT	8% LT	26% LT	ENC41
13% GT		4% GT	16% LT	RNC59
9% GT	3% LT		19% LT	NC
35% GT	19% GT	23% GT		US

Figure 6.9 iii. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

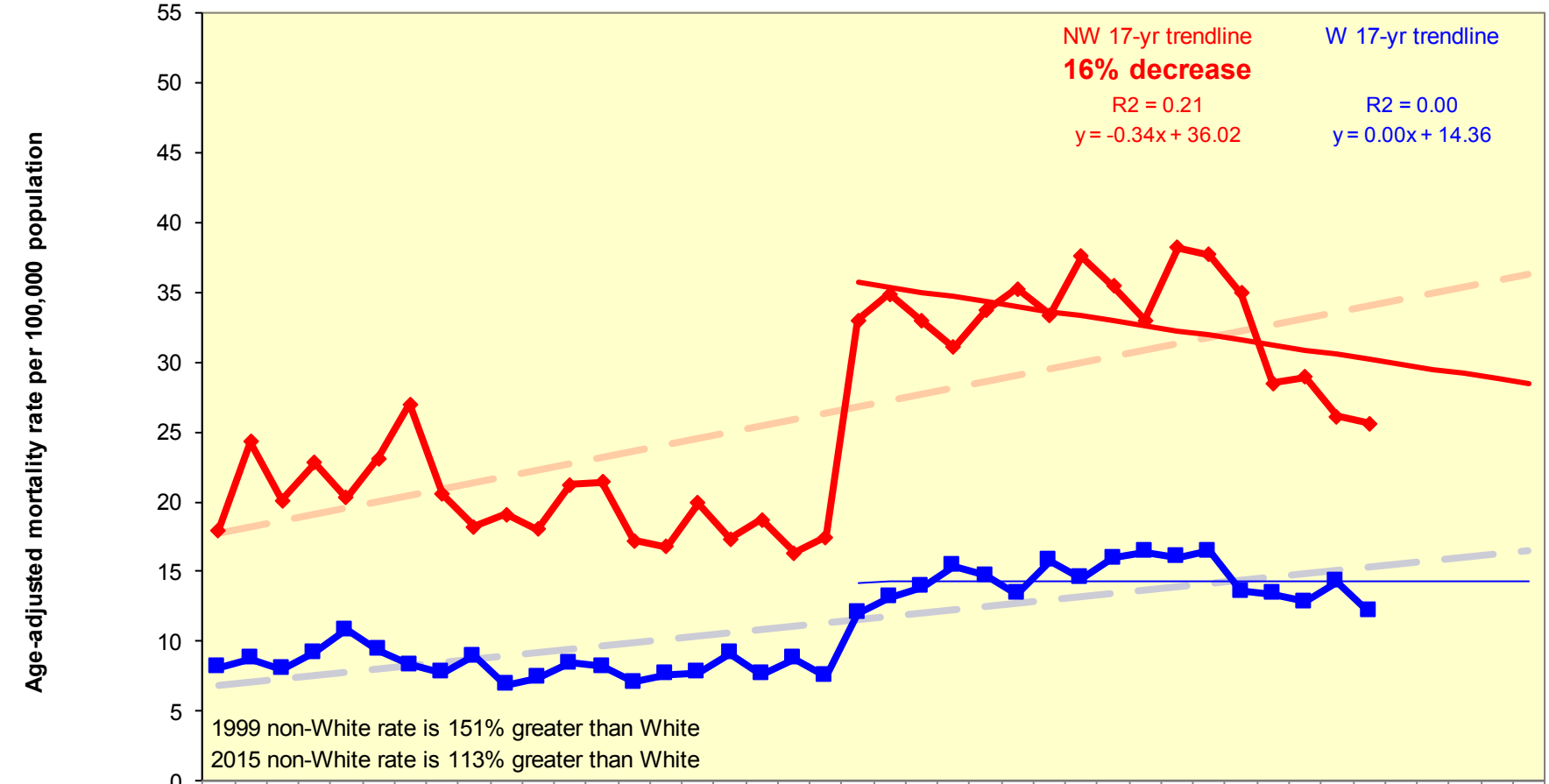


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	22	32	28	30	21	27	32	28	26	27	20	27	29	24	26	24	22	26	21	26	39	40	38	36	34	36	33	39	38	40	44	46	37	33	30	31	34					
WM	11	12	12	13	12	14	11	10	12	8	10	10	13	10	10	10	15	13	10	9	15	16	15	20	17	16	18	17	21	21	20	22	17	18	16	18	16					
NWF	15	20	15	18	20	20	24	17	13	15	17	18	17	13	13	17	15	15	14	12	30	33	30	29	33	35	34	36	33	28	35	33	33	26	28	24	20					
WF	6	7	6	7	10	7	8	7	7	6	6	8	6	6	6	7	7	5	8	7	11	12	12	13	12	12	14	13	12	13	14	13	11	11	11	12	9					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	57% LT	11% LT	67% LT	NWM
134% GT		107% GT	23% LT	WM
13% GT	52% LT		63% LT	NWF
203% GT	29% GT	169% GT		WF

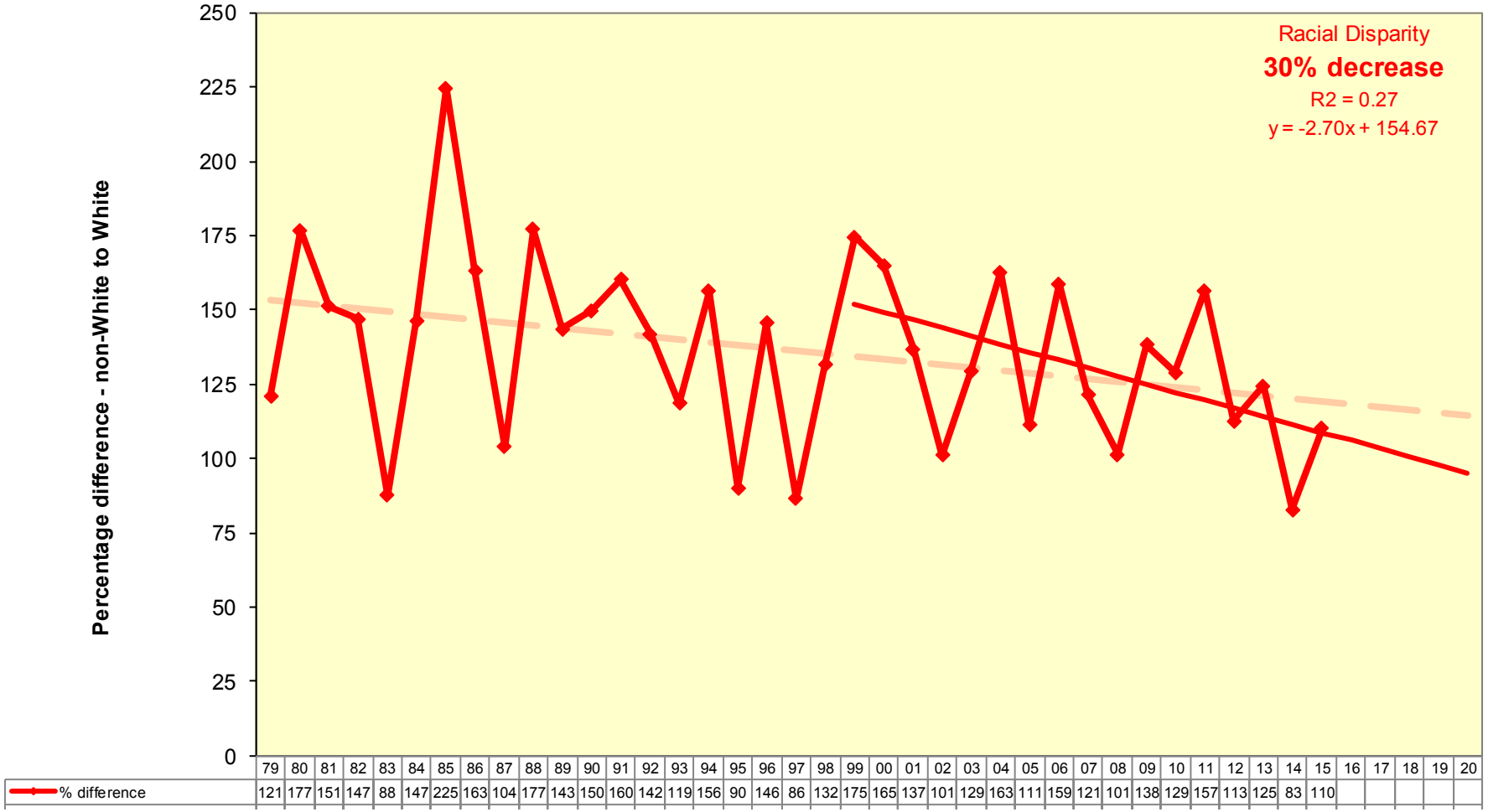
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	48% LT	22% LT	68% LT	NWM
91% GT		49% GT	38% LT	WM
29% GT	33% LT		58% LT	NWF
209% GT	61% GT	140% GT		WF

Figure 6.9 iv. Nephritis, Nephrotic Syndrome, and Nephrosis: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	18	24	20	23	20	23	27	21	18	19	18	21	21	17	17	20	17	19	16	17	33	35	33	31	34	35	33	38	35	33	38	38	35	29	29	26	26					
W	8	9	8	9	11	9	8	8	9	7	7	8	8	7	8	8	9	8	9	8	12	13	14	15	15	13	16	15	16	16	16	16	14	13	13	14	12					

Figure 6.9 v. Nephritis, Nephrotic Syndrome, and Nephrosis:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020

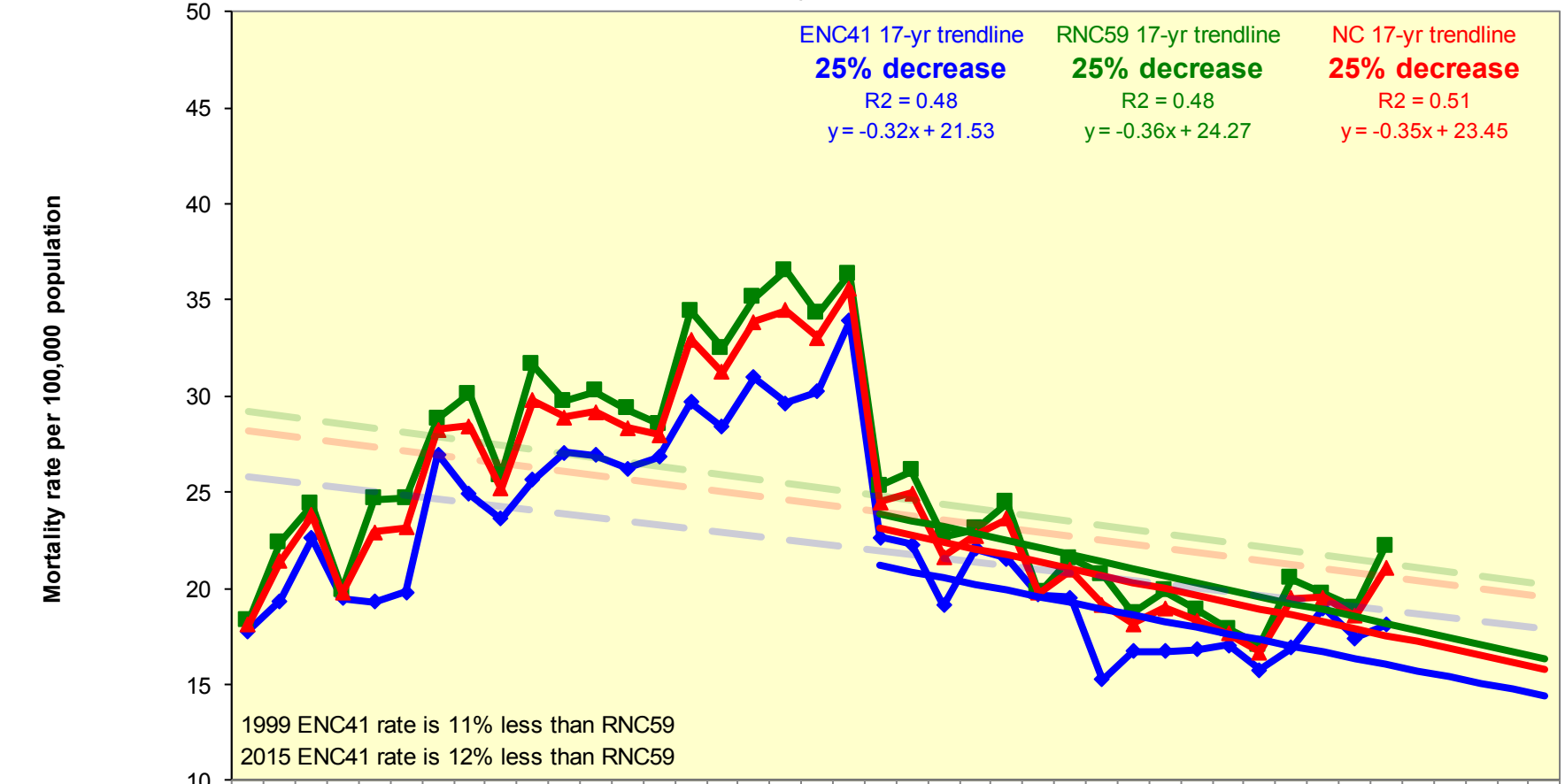


Pneumonia and Influenza

- The mortality rate trend for pneumonia and influenza for ENC, RNC and NC have all declined over the 17-year period. The ENC rate in 2015 is 12% less than the RNC rate.
- The age-adjusted mortality rate trends for all NC regions are similar and are decreasing at about the same pace. The ENC rate is 11% higher than the US rate.
- The age-adjusted mortality rate trend for all four demographics are decreasing. The trends for non-White males and White males are the highest. Trend lines predict convergence of all four groups in the future.
- The Non-White mortality rate is 8% less than the White rate in 2015. Both are decreasing.
- The 17-year decreasing 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 6.10 i. Pneumonia and Influenza: Trends in mortality rates for ENC41, RNC59, and NC, 1979-2015 with projections to 2020

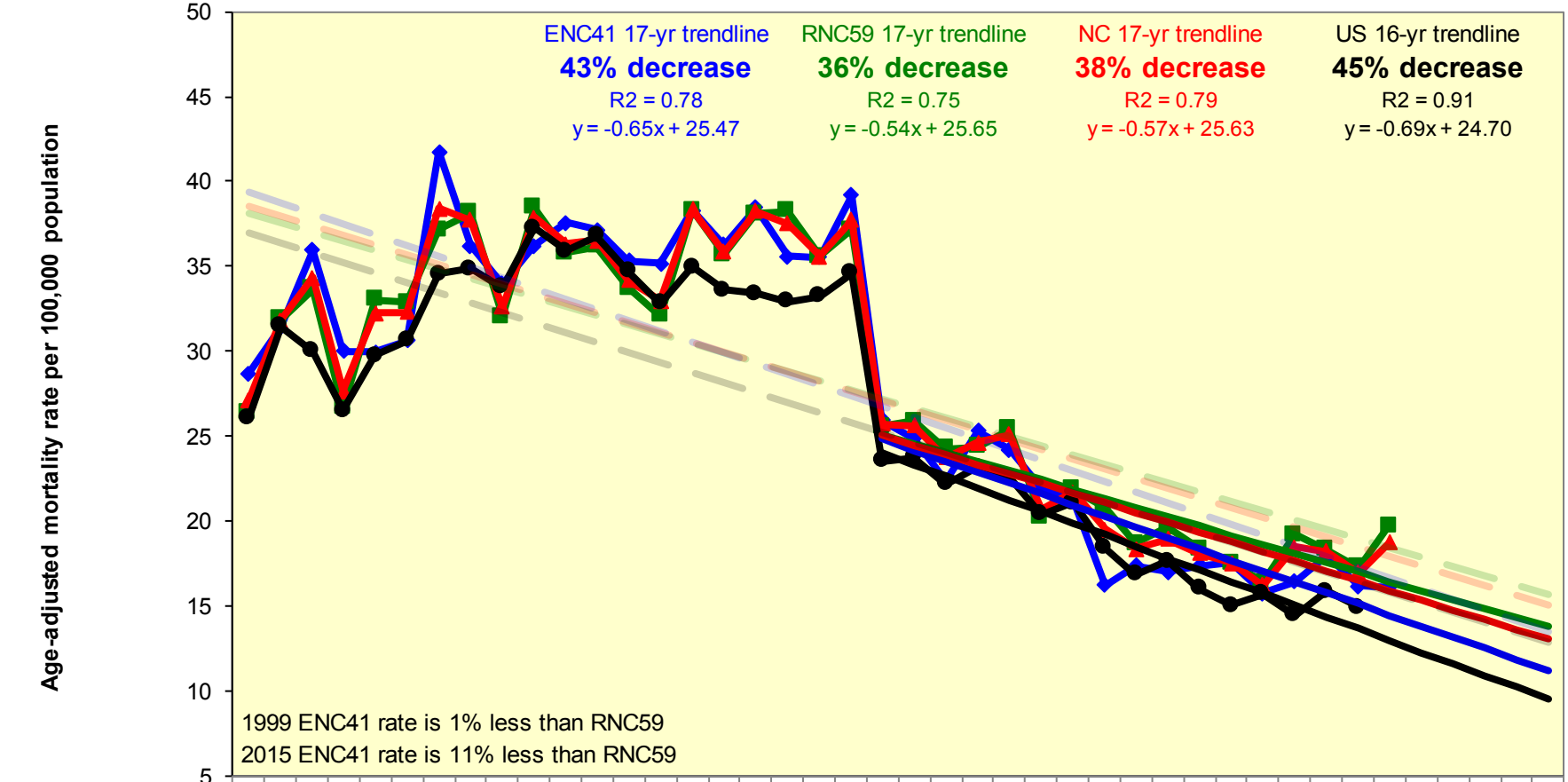


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	18	19	23	19	19	20	27	25	24	26	27	27	26	27	30	28	31	30	30	34	23	22	19	22	22	20	20	15	17	17	17	17	16	17	19	17	18					
RNC59	18	22	24	20	25	25	29	30	26	32	30	30	29	29	34	33	35	37	34	36	25	26	23	23	24	20	22	21	19	20	19	18	17	20	20	19	22					
NC	18	21	24	20	23	23	28	28	25	30	29	29	28	28	33	31	34	34	33	36	25	25	22	23	24	20	21	19	18	19	18	18	17	19	20	19	21					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	13% GT	9% GT	ENC41
11% LT		3% LT	RNC59
8% LT	3% GT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	13% GT	9% GT	ENC41
12% LT		3% LT	RNC59
9% LT	3% GT		NC

Figure 6.10 ii. Pneumonia and Influenza: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

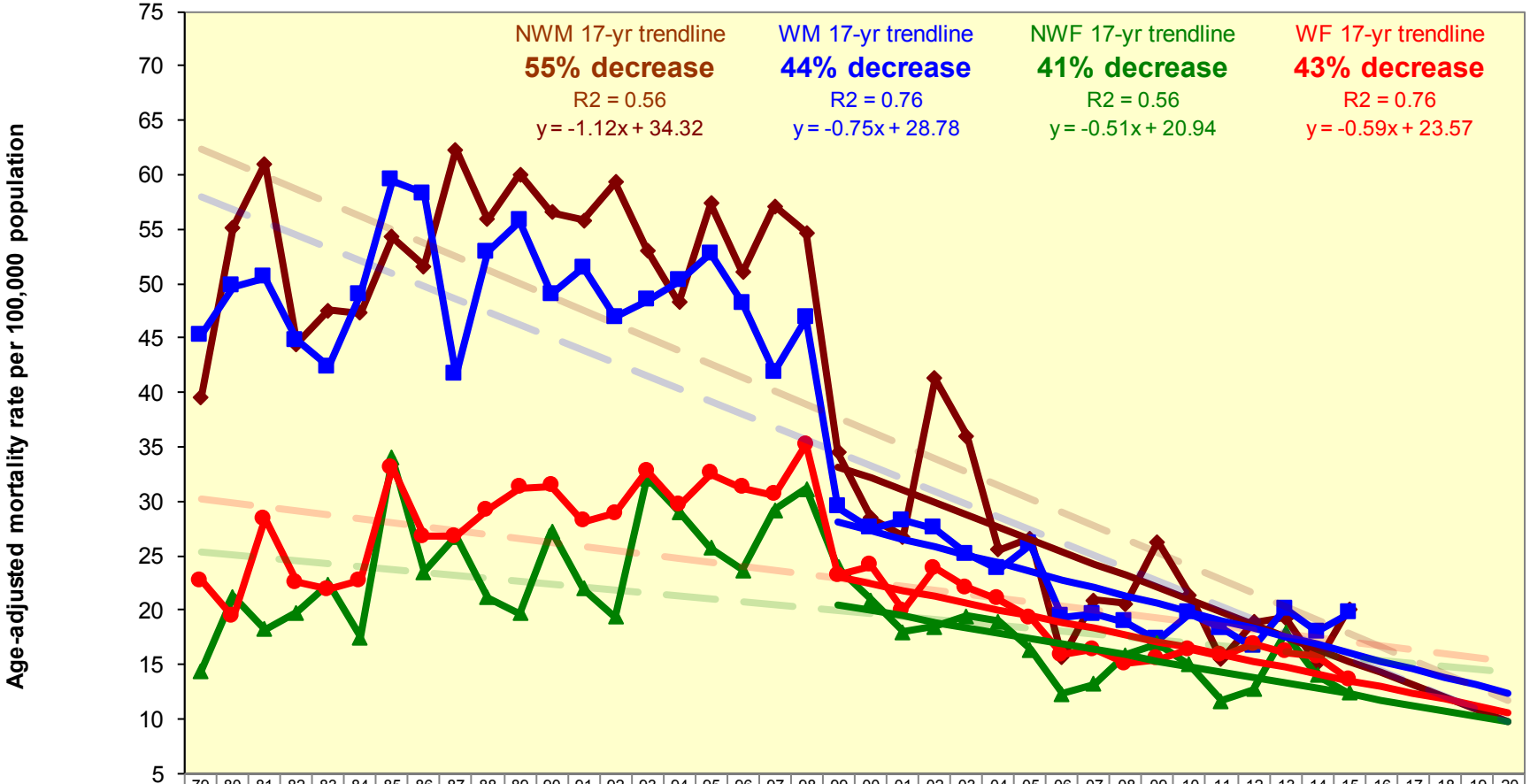


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	29	31	36	30	30	31	42	36	34	36	38	37	35	35	38	36	38	36	36	39	26	25	22	25	24	22	21	16	17	17	17	18	16	16	18	16	16					
RNC59	26	32	34	27	33	33	37	38	32	38	36	36	34	32	38	36	38	38	36	37	26	26	24	24	25	20	22	21	19	20	18	18	16	19	18	17	20					
NC	27	32	34	28	32	32	38	38	33	38	36	37	34	33	38	36	38	38	36	38	26	26	24	25	25	21	22	20	18	19	18	18	16	18	18	17	19					
US	26	31	30	27	30	31	35	35	34	37	36	37	35	33	35	34	33	33	33	35	24	24	22	23	23	20	21	18	17	18	16	15	16	14	16	15						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	1% GT	1% GT	3% LT	ENC41
1% LT		0% LT	4% LT	RNC59
1% LT	0% GT		4% LT	NC
3% GT	4% GT	4% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	13% GT	9% GT	10% LT	ENC41
11% LT		3% LT	20% LT	RNC59
8% LT	3% GT		17% LT	NC
11% GT	24% GT	21% GT		US

Figure 6.10 iii. Pneumonia and Influenza: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	40	55	61	44	48	47	54	52	62	56	60	57	56	59	53	48	57	51	57	55	34	28	27	41	36	25	27	16	21	21	26	21	15	19	19	15	20					
WM	45	50	51	45	42	49	59	58	42	53	56	49	51	47	48	50	53	48	42	47	29	27	28	28	25	24	26	19	20	19	17	20	18	17	20	18	20					
NWF	14	21	18	20	22	18	34	23	27	21	20	27	22	19	32	29	26	24	29	31	24	21	18	18	19	19	16	12	13	16	17	15	12	13	18	14	12					
WF	23	19	28	23	22	23	33	27	27	29	31	31	28	29	33	30	33	31	31	35	23	24	20	24	22	21	19	16	16	15	15	16	16	17	16	16	14					

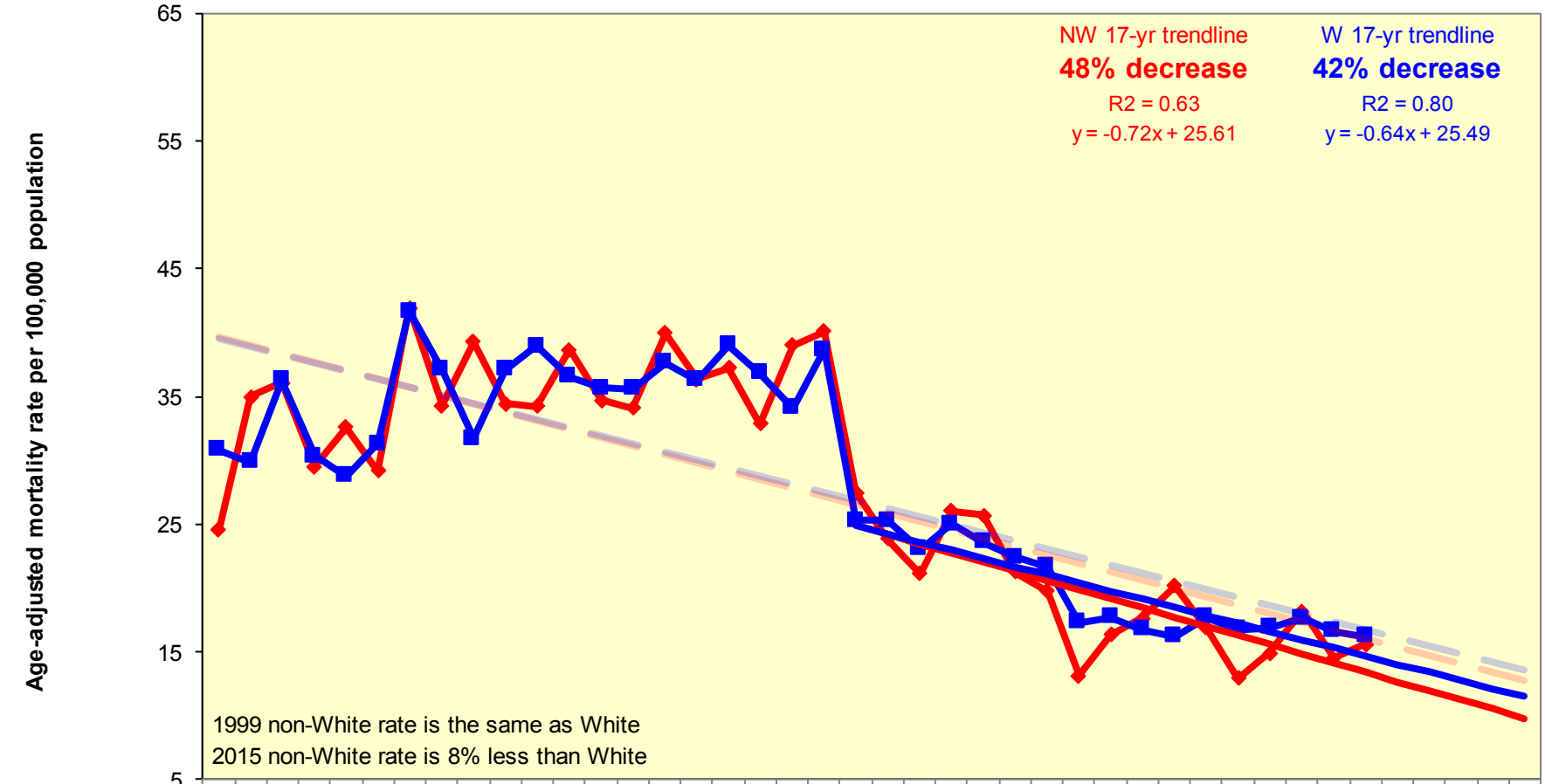
Comparison of Fitted Rates in 1999

NWM	WM	NWF	WF	
	16% LT	39% LT	31% LT	NWM
19% GT		27% LT	18% LT	WM
64% GT	37% GT		13% GT	NWF
46% GT	22% GT	11% LT		WF

Comparison of Fitted Rates in 2015

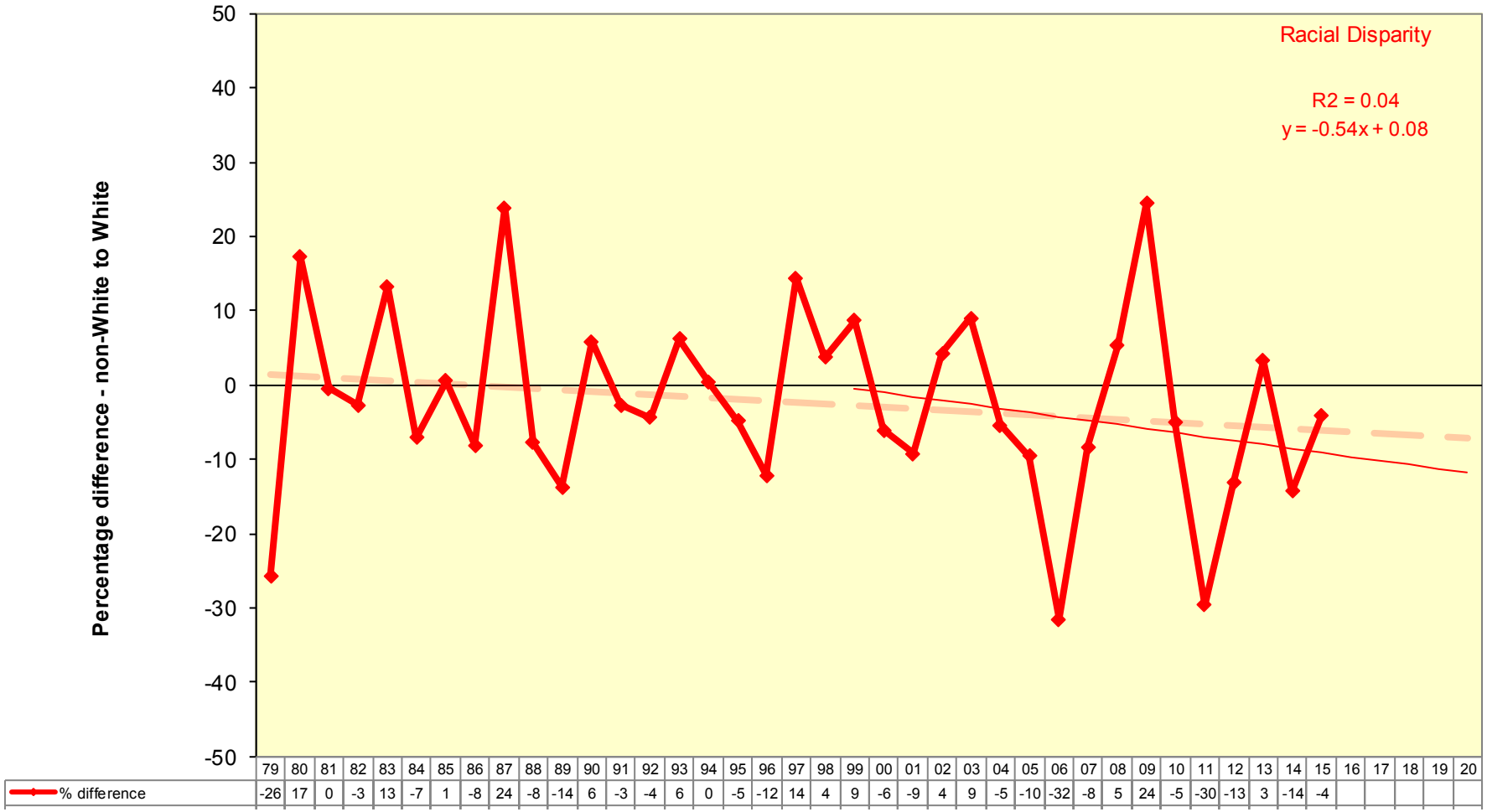
NWM	WM	NWF	WF	
	2% GT	22% LT	14% LT	NWM
2% LT		24% LT	16% LT	WM
29% GT	32% GT		11% GT	NWF
16% GT	19% GT	10% LT		WF

Figure 6.10 iv. Pneumonia and Influenza: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	25	35	36	30	33	29	42	34	39	34	34	39	35	34	40	36	37	33	39	40	27	24	21	26	26	21	20	13	16	18	20	17	13	15	18	15	16					
W	31	30	36	30	29	31	42	37	32	37	39	37	36	36	38	36	39	37	34	39	25	25	23	25	24	22	22	17	18	17	16	18	17	17	18	17	16					

Figure 6.10 v. Pneumonia and Influenza: Measuring disparity in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	-26	17	0	-3	13	-7	1	-8	24	-8	-14	6	-3	-4	6	0	-5	-12	14	4	9	-6	-9	4	9	-5	-10	-32	-8	5	24	-5	-30	-13	3	-14	-4					

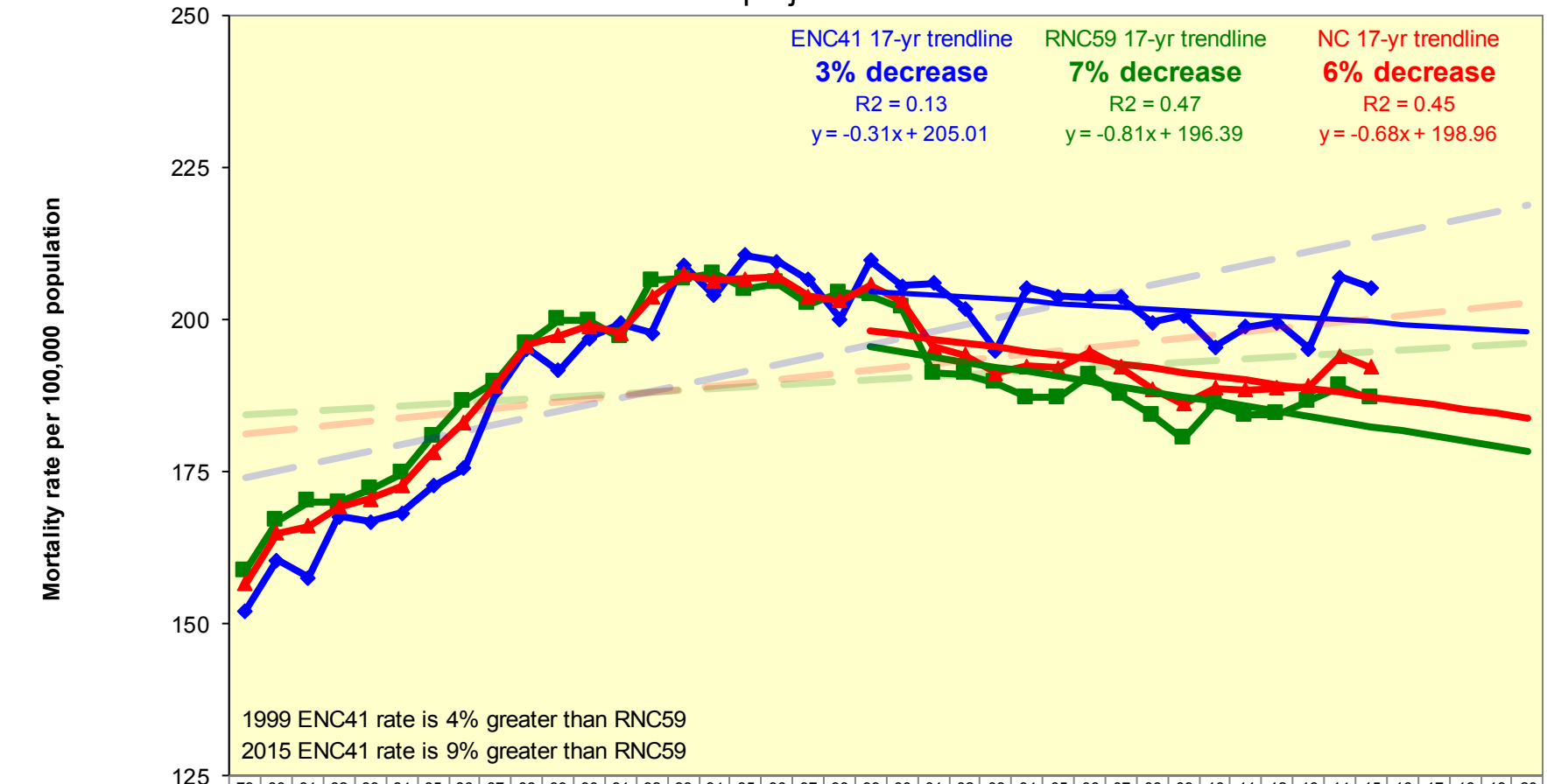
7. Trends and Disparities in Mortality in ENC41: Cancer - All Sites and HIV Disease; 1979-2015

Cancer - All Sites

- The cancer – all sites mortality rate trends for ENC have decreased slightly (3%) over 17 years. The RNC and NC rates have decreased more than ENC, causing these rates to diverge.
- The age-adjusted cancer – all sites mortality rates trends for ENC, RNC, NC and the US are all decreasing at about the same pace, although the ENC rate trend is 7% greater than RNC, and 10% greater than the US.
- The rates for non-White males has decreased 36% over 17 years, and is projected to converge with the rate for White males, which show a 25% decrease. The rates for White females and non-White females show a slight decrease and are converging.
- Both White and non-White cancer mortality trends are decreasing over the 17 year period, although the non-White rate remains higher. Non-White rates decreased 28% and White rates decreased 20%, suggesting future convergence.
- The moderately reliable 17-year trend for racial disparity shows a 62% 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, 1979-2015 with projections to 2020

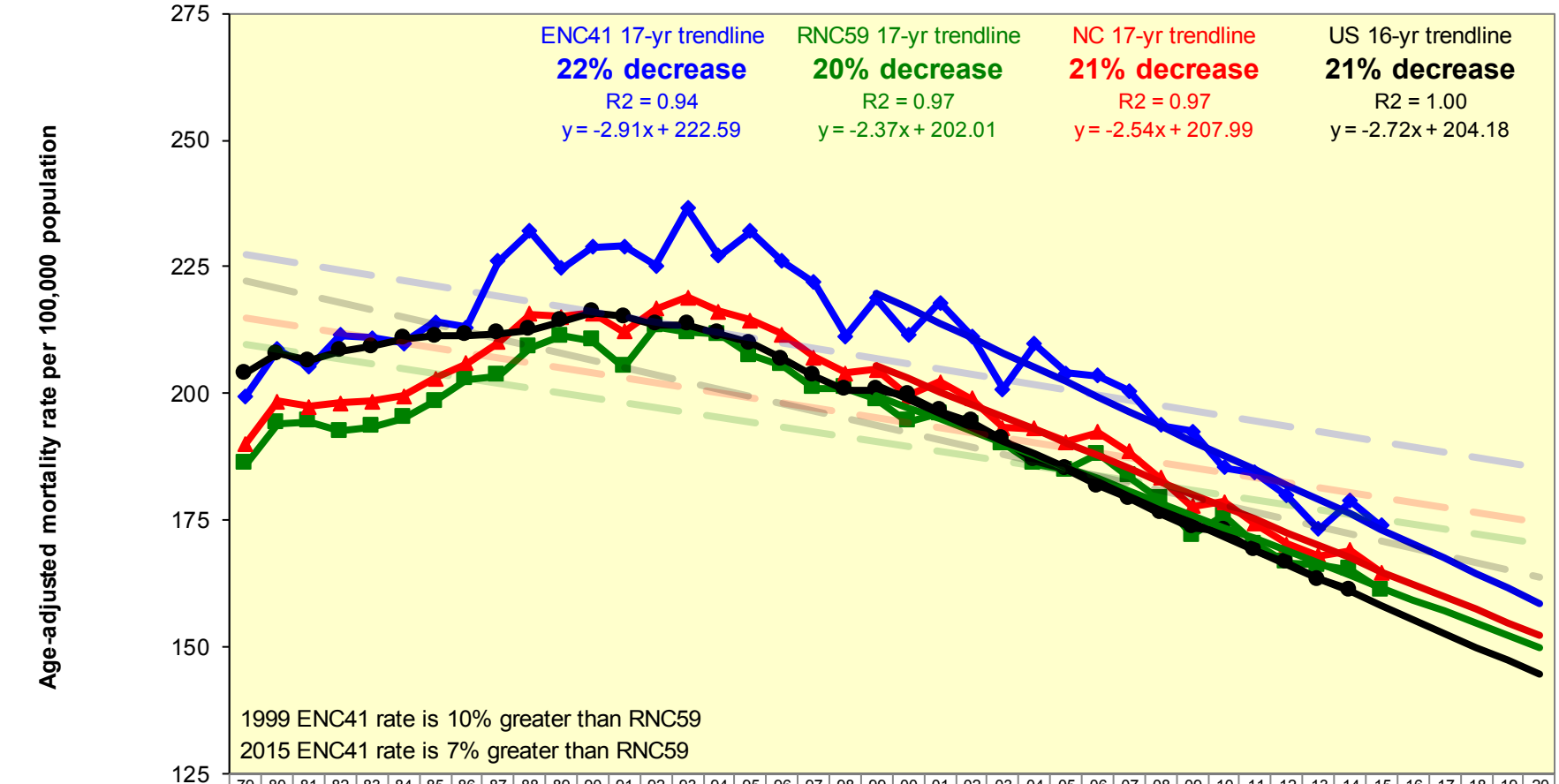


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	152	161	158	168	167	168	173	176	188	195	192	197	200	198	209	204	211	210	207	200	210	206	206	202	195	205	204	204	204	200	201	196	199	200	195	207	205					
RNC59	159	167	170	170	172	175	181	187	190	196	200	200	197	206	207	208	205	206	203	204	204	202	191	191	190	187	187	191	188	184	181	186	184	184	187	189	187					
NC	157	165	166	169	171	173	178	183	189	196	197	199	198	204	207	207	207	207	204	203	206	203	196	194	191	192	192	195	192	189	186	189	188	189	189	194	192					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	4% LT	3% LT	ENC41
4% GT		1% GT	RNC59
3% GT	1% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	8% LT	6% LT	ENC41
9% GT		3% GT	RNC59
6% GT	3% LT		NC

Figure 7.1 ii. Cancer - All Sites: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

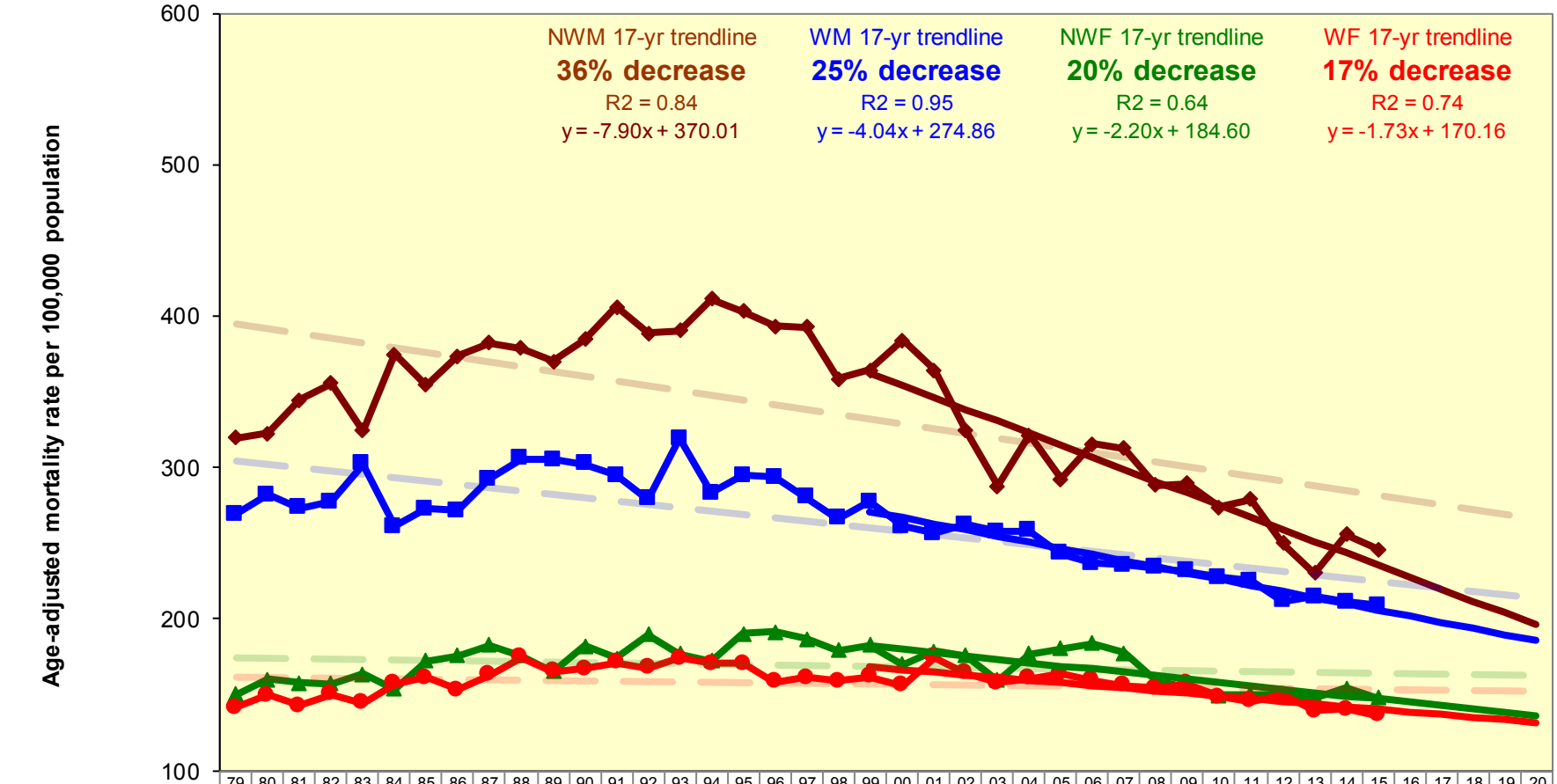


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	199	209	205	211	211	210	214	213	226	232	225	229	229	225	237	227	232	226	222	211	219	211	218	211	201	210	204	203	200	194	193	185	184	180	173	179	174					
RNC59	186	194	194	192	193	195	198	203	204	209	211	210	205	213	212	212	207	206	201	201	199	194	196	194	190	186	185	188	184	179	172	176	170	167	166	165	161					
NC	190	198	197	198	198	199	203	206	210	216	215	216	212	217	219	216	214	212	207	204	205	199	202	199	193	193	190	192	188	183	178	178	174	170	168	169	165					
US	204	208	206	208	209	211	211	212	212	212	214	216	215	214	214	212	210	207	203	201	201	200	196	194	191	187	185	182	179	176	174	173	169	166	163	161						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	9% LT	7% LT	8% LT	ENC41
10% GT		3% GT	1% GT	RNC59
7% GT	3% LT		2% LT	NC
9% GT	1% LT	2% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	7% LT	5% LT	9% LT	ENC41
7% GT		2% GT	2% LT	RNC59
5% GT	2% LT		4% LT	NC
10% GT	2% GT	4% GT		US

Figure 7.1 iii. Cancer - All Sites: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

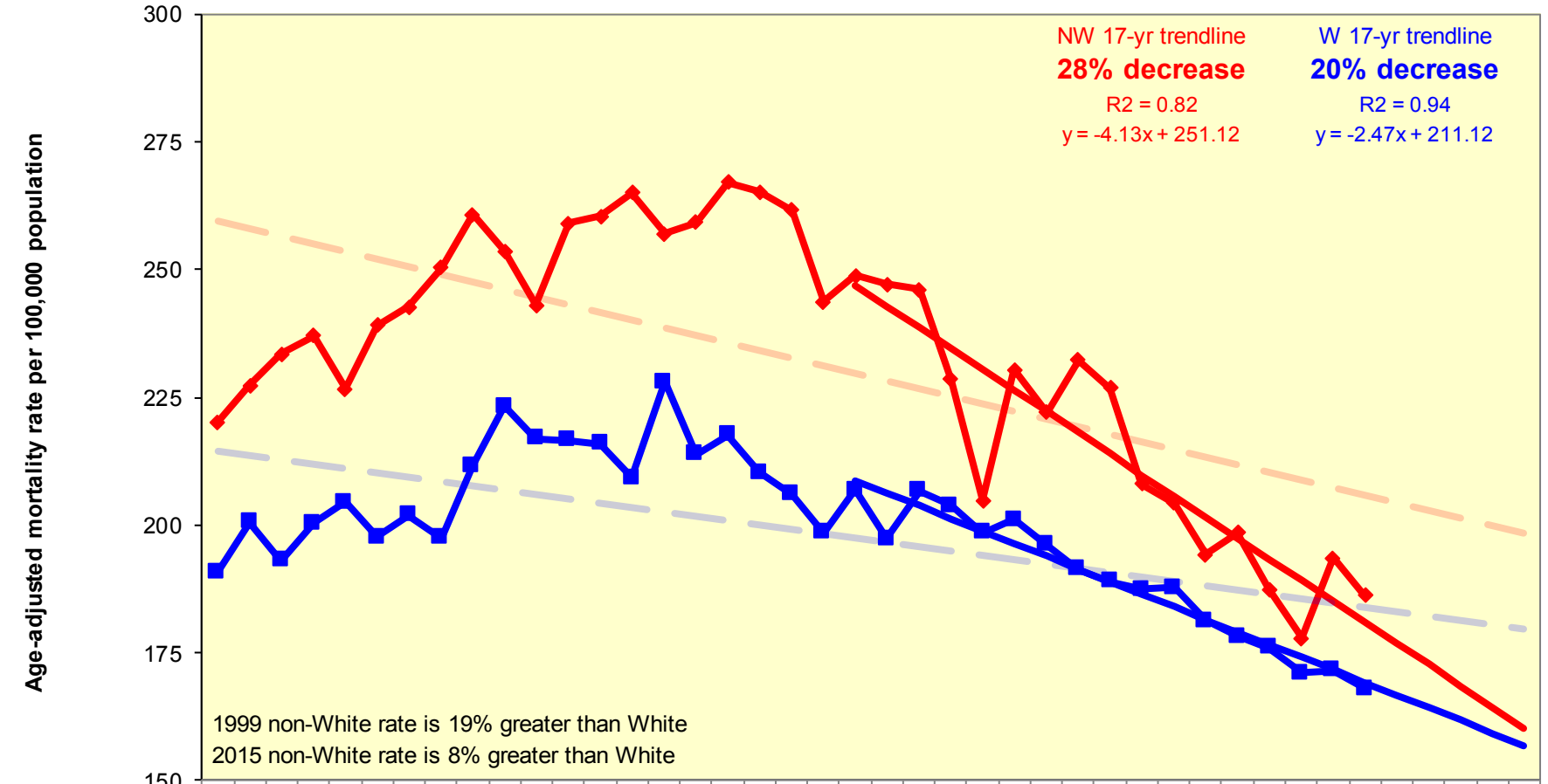


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	320	323	345	356	325	375	355	373	383	379	370	385	406	389	391	411	403	393	393	358	364	384	364	324	288	321	293	316	313	288	290	274	279	250	231	256	246					
WM	269	282	273	278	302	261	273	272	293	306	305	302	295	279	319	283	295	294	280	266	277	261	256	263	257	258	243	237	236	234	232	227	225	212	215	211	209					
NWF	150	160	158	157	164	154	172	176	183	176	165	182	174	190	177	172	191	191	187	179	183	170	179	176	160	177	180	184	178	159	155	150	150	151	148	154	148					
WF	142	150	143	150	145	158	161	153	163	175	165	167	171	168	174	171	170	158	161	159	162	156	175	165	158	161	164	160	156	155	157	149	146	150	139	141	136					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	26% LT	50% LT	54% LT	NWM
35% GT		33% LT	38% LT	WM
100% GT	49% GT		8% LT	NWF
117% GT	62% GT	8% GT		WF

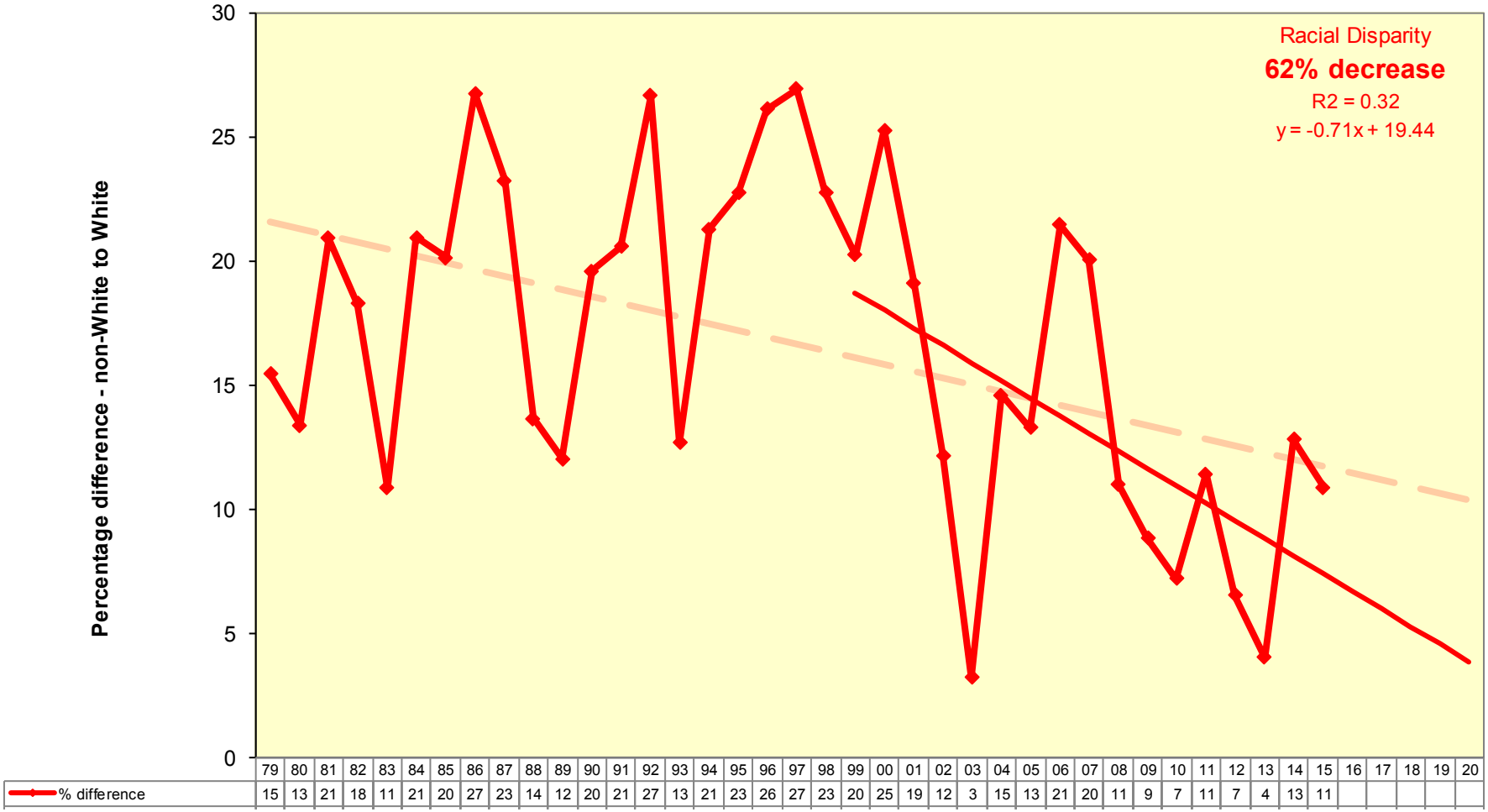
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	14% LT	39% LT	42% LT	NWM
16% GT		29% LT	32% LT	WM
63% GT	41% GT		5% LT	NWF
71% GT	48% GT	5% GT		WF

Figure 7.1 iv. Cancer - All Sites: Trends in age-adjusted mortality rates by race for ENC41, 1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	220	227	233	237	227	239	243	250	261	254	243	259	260	265	257	259	267	265	262	244	249	247	246	228	205	230	222	232	227	208	204	194	199	187	178	194	186					
W	191	201	193	200	205	198	202	198	212	223	217	217	216	209	228	214	218	210	206	199	207	197	207	204	199	201	196	191	189	187	188	181	178	176	171	172	168					

Figure 7.1 v. Cancer - All Sites:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



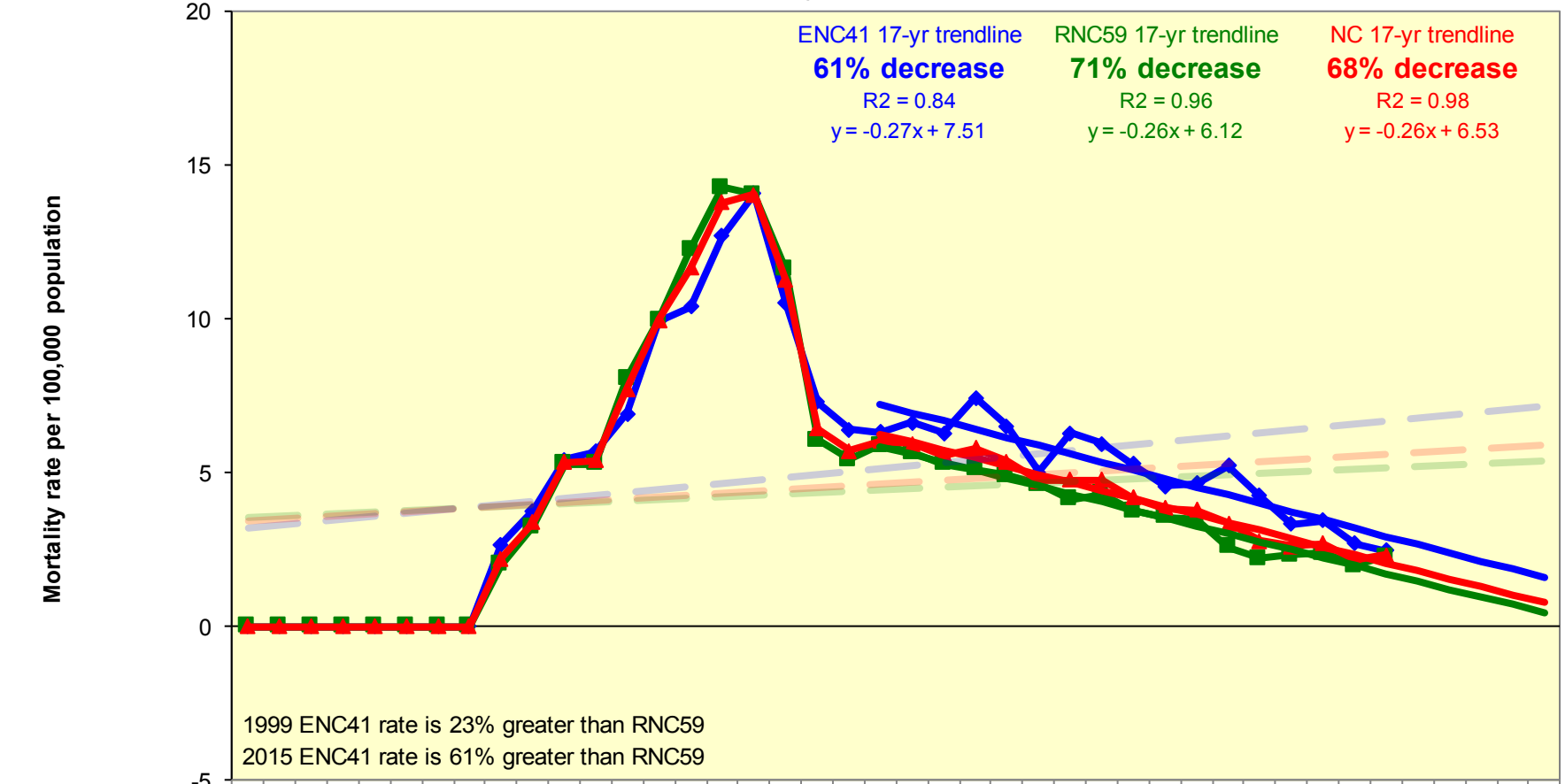
	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
% difference	15	13	21	18	11	21	20	27	23	14	12	20	21	27	13	21	23	26	27	23	20	25	19	12	3	15	13	21	20	11	9	7	11	7	4	13	11					

HIV Disease

- The fitted HIV mortality rate for ENC has been decreasing over the past 17 years, but was still 61% greater than RNC in 2015.
- The 17-year age-adjusted rate trend for ENC had a 64% decrease. The 2015 ENC rate is 66% greater than RNC.
- Non-White males continue to have the highest rates of age-adjusted mortality, but this rate has also decreased 71% in a 17-year reliable trend. The White male rate decreased 55% during that same period and the rate for non-White females decreased 57%. A convergence of the non-White male rate with other rates is expected in the near future.
- The 17-year non-White age-adjusted HIV mortality rate has decreased by 66% in a reliable trend. The age-adjusted mortality rate for Whites decreased by 55%, although the absolute rate for this group is much lower.
- In a moderately reliable trend, the 17-year period shows a 28% increase in racial disparity.

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, 1979-2015 with projections to 2020

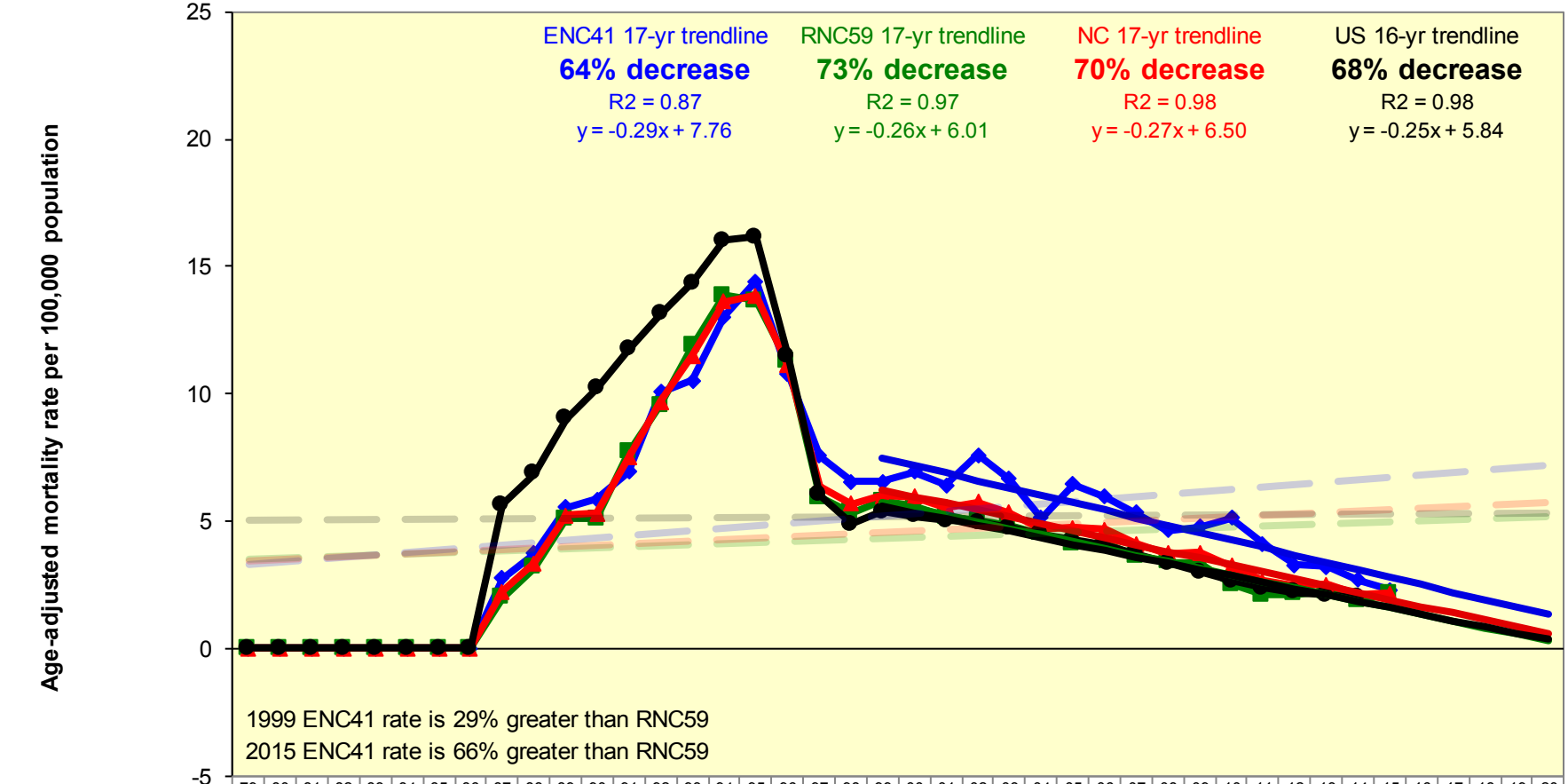


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	0	0	0	0	0	0	0	0	3	4	5	6	7	10	10	13	14	11	7	6	6	7	6	7	7	5	6	6	5	5	5	5	4	3	3	3	2					
RNC59	0	0	0	0	0	0	0	0	2	3	5	5	8	10	12	14	14	12	6	5	6	6	5	5	5	5	4	4	4	4	3	3	2	2	2	2	2					
NC	0	0	0	0	0	0	0	0	2	3	5	5	8	10	12	14	14	11	6	6	6	6	6	6	5	5	5	5	4	4	4	3	3	3	3	2	2					

Comparison of Fitted Rates in 1999			
ENC41	RNC59	NC	
	18% LT	13% LT	ENC41
23% GT		7% GT	RNC59
15% GT	6% LT		NC

Comparison of Fitted Rates in 2015			
ENC41	RNC59	NC	
	38% LT	27% LT	ENC41
61% GT		17% GT	RNC59
37% GT	15% LT		NC

Figure 7.2 ii. HIV Disease: Trends in age-adjusted mortality rates for ENC41, RNC59, NC, and US, 1979-2015 with projections to 2020

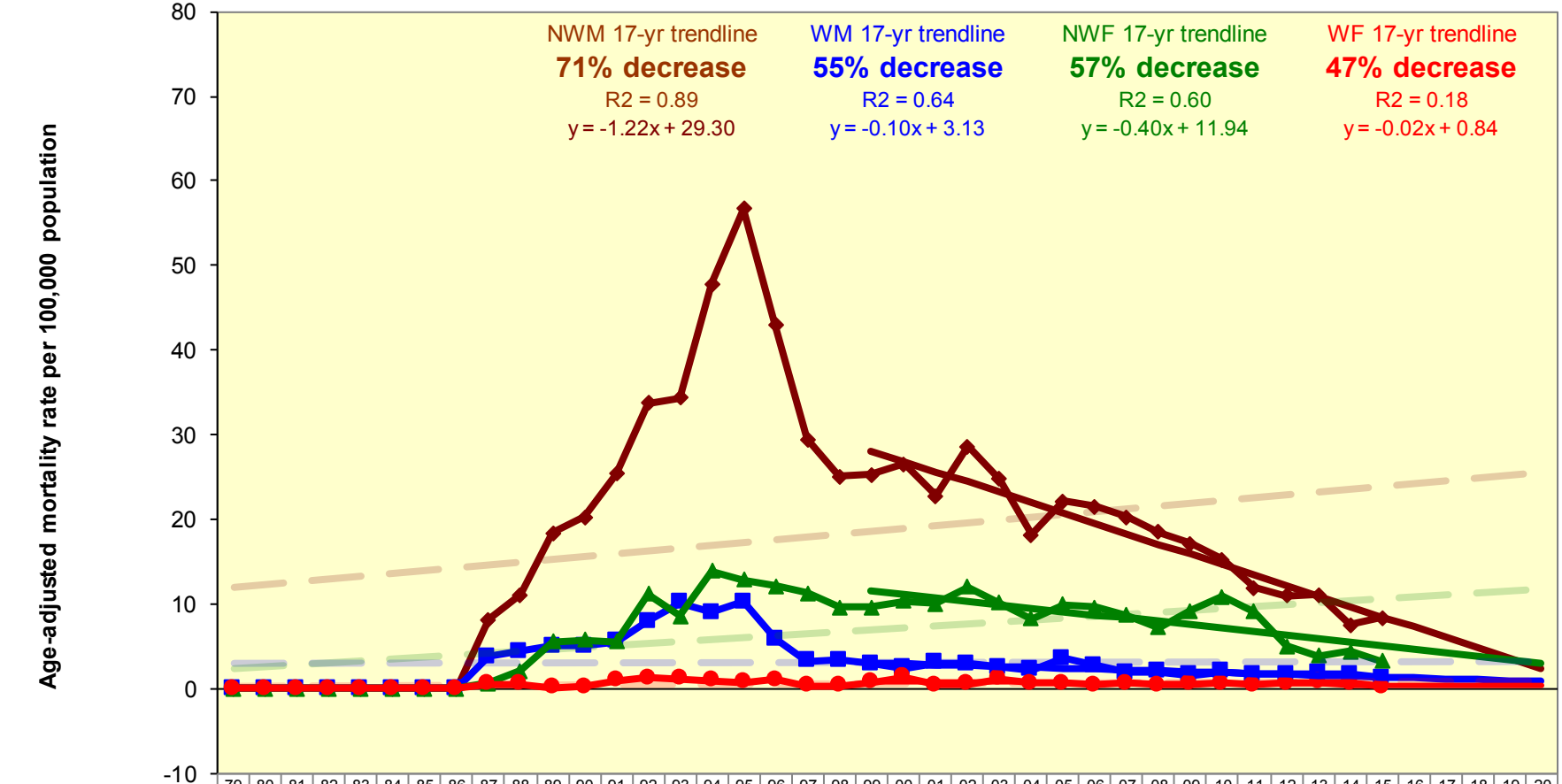


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
ENC41	0	0	0	0	0	0	0	0	3	4	6	6	7	10	11	13	14	11	8	7	7	7	6	8	7	5	6	6	5	5	5	5	4	3	3	3	2					
RNC59	0	0	0	0	0	0	0	0	2	3	5	5	8	10	12	14	14	11	6	5	6	6	5	5	5	4	4	4	4	3	3	3	2	2	2	2	2					
NC	0	0	0	0	0	0	0	0	2	3	5	5	7	10	11	14	14	11	6	6	6	6	6	6	5	5	5	5	4	4	4	3	3	2	3	2	2					
US	0	0	0	0	0	0	0	0	6	7	9	10	12	13	14	16	16	12	6	5	5	5	5	5	5	4	4	4	4	3	3	3	2	2	2	2						

Comparison of Fitted Rates in 1999				
ENC41	RNC59	NC	US	
	23% LT	16% LT	25% LT	ENC41
29% GT		8% GT	3% LT	RNC59
19% GT	8% LT		10% LT	NC
33% GT	3% GT	11% GT		US

Comparison of Fitted Rates in 2015				
ENC41	RNC59	NC	US	
	40% LT	29% LT	40% LT	ENC41
66% GT		18% GT	0% LT	RNC59
41% GT	15% LT		16% LT	NC
67% GT	0% GT	19% GT		US

Figure 7.2 iii. HIV Disease: Trends in age-adjusted mortality rates by race and gender for ENC41, 1979-2015 with projections to 2020

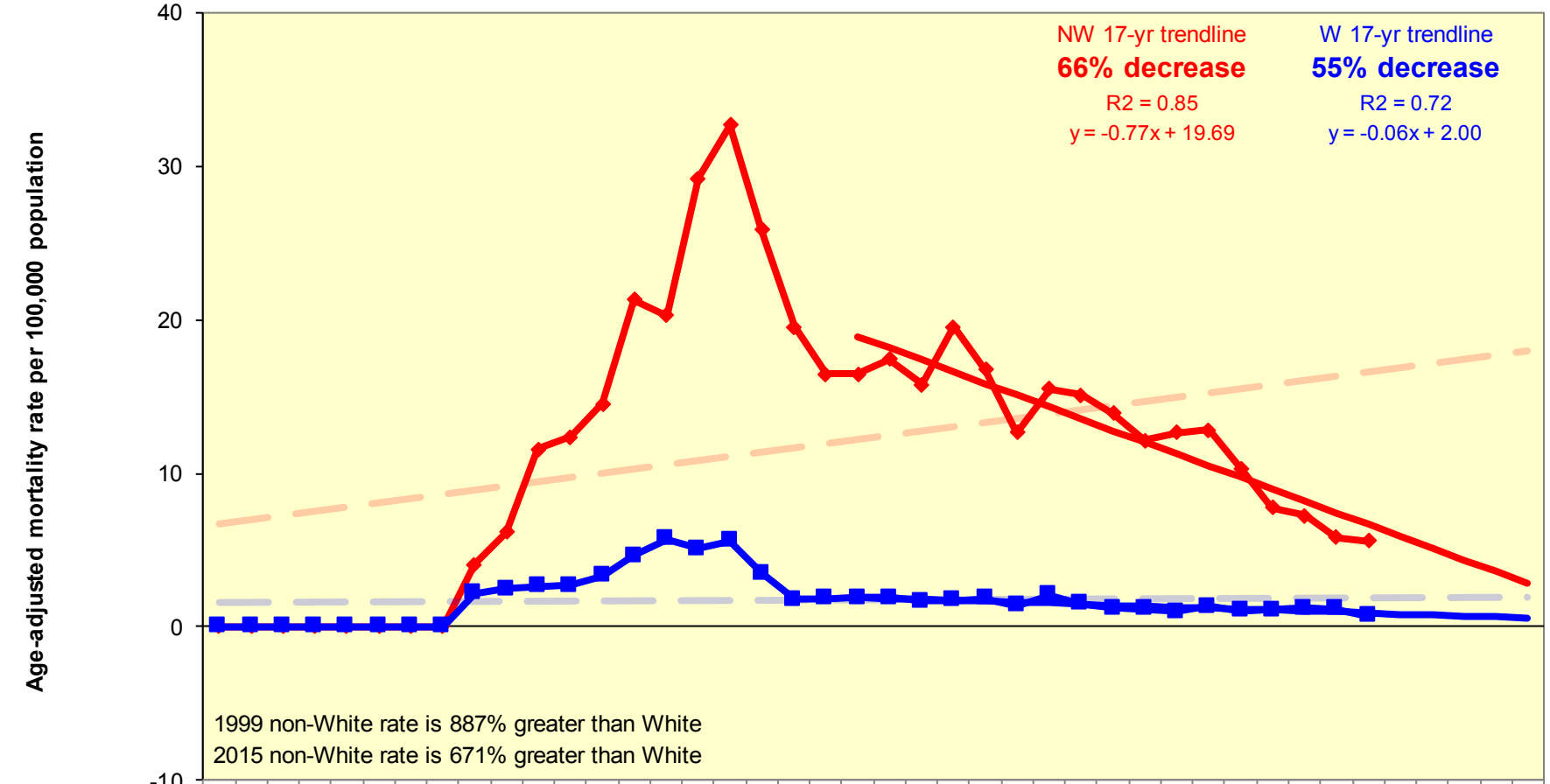


	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NWM	0	0	0	0	0	0	0	0	8	11	18	20	25	34	34	48	57	43	29	25	25	27	23	29	25	18	22	22	20	18	17	15	12	11	11	8	8					
WM	0	0	0	0	0	0	0	0	4	4	5	5	5	8	10	9	10	6	3	3	3	2	3	3	3	2	4	3	2	2	2	2	2	2	2	2	1					
NWF	0	0	0	0	0	0	0	0	1	2	6	6	6	11	9	14	13	12	11	10	10	10	10	12	10	8	10	10	9	7	9	11	9	5	4	4	3					
WF	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	1	0	0	1	1	0	0	1	1	1	0	1	0	0	1	0	1	1	1	0					

Comparison of Fitted Rates in 1999				
NWM	WM	NWF	WF	
	89% LT	59% LT	97% LT	NWM
836% GT		281% GT	73% LT	WM
145% GT	74% LT		93% LT	NWF
3405% GT	275% GT	1329% GT		WF

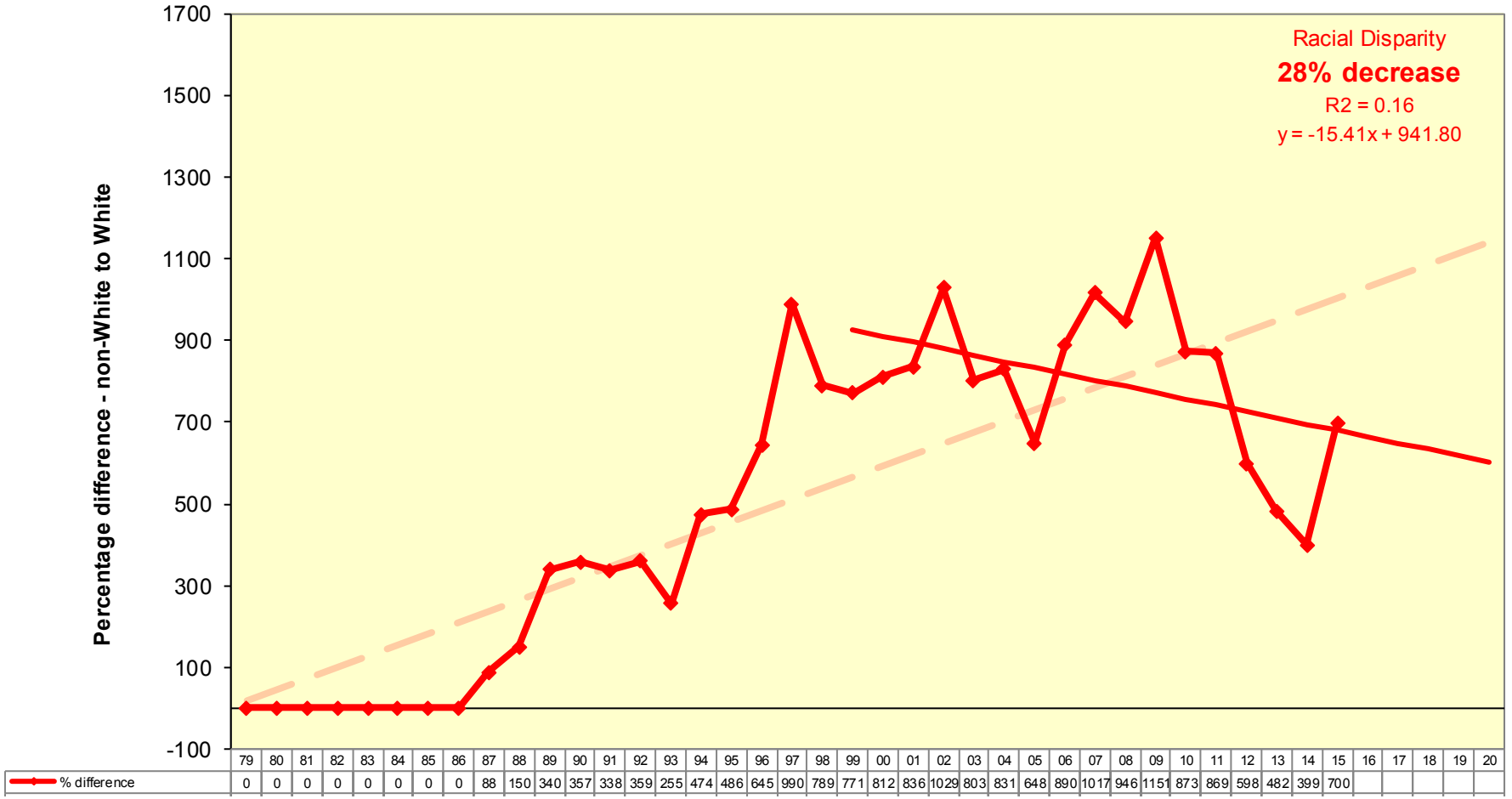
Comparison of Fitted Rates in 2015				
NWM	WM	NWF	WF	
	85% LT	44% LT	95% LT	NWM
548% GT		266% GT	69% LT	WM
77% GT	73% LT		92% LT	NWF
1995% GT	223% GT	1083% GT		WF

Figure 7.2 iv. HIV Disease:
Trends in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
NW	0	0	0	0	0	0	0	0	4	6	12	12	15	21	20	29	33	26	20	16	16	17	16	20	17	13	15	15	14	12	13	13	10	8	7	6	6					
W	0	0	0	0	0	0	0	0	2	2	3	3	3	5	6	5	6	3	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1					

Figure 7.2 v. HIV Disease:
Measuring disparity in age-adjusted mortality rates by race for ENC41,
1979-2015 with projections to 2020



8. Appendix

Disease	ICD 10 Code	ICD 9 Code
Diseases of Heart	I00-I09, I11, I13, I20-I51	390-398, 402, 404, 410-429
Cerebrovascular Disease	I60-I69	430-434, 436-438
Atherosclerosis	I70	440
Cancer - All Sites	C00-C97	140-208
Cancer - Lip, Oral Cavity, and Pharynx	C00-C14	140-149
Cancer - Stomach	C16	151
Cancer - Colon, Rectum, and Anus	C18-C21	153-154
Cancer - Liver	C22	155
Cancer - Pancreas	C25	157
Cancer - Larynx	C32	161
Cancer - Trachea, Bronchus, and Lung	C33-C34	162
Cancer - Malignant Melanoma of Skin	C43	172
Cancer - Breast	C50	174-175
Cancer - Cervix Uteri	C53	180
Cancer - Ovary	C56	183.0
Cancer - Prostate	C61	185
Cancer - Bladder	C67	188
Cancer - Brain	C71	
Cancer - Non-Hodgkin's Lymphoma	C82-C85	200, 202
Cancer - Leukemia	C91-C95	204-208
HIV Disease	B20-B24	042-044
Septicemia	A40-A41	038
Diabetes Mellitus	E10-E14	250
Pneumonia and Influenza	J10-J18	480-487
Chronic Lower Respiratory Diseases	J40-J47	490-494, 496
Chronic Liver Disease and Cirrhosis	K70, K73-K74	571
Nephritis, Nephrotic Syndrome, and Nephrosis	N00-N07, N17-N19, N25-N27	580-589
Unintentional Motor Vehicle Injuries	V02-V04, V09.0, V09.2, V12-V14, V19.0-V19.2, V19.4-V19.6, V20-V79, 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	E810-E825
All Other Unintentional Injuries and Adverse Effects	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, W00-X59, Y85, Y86	E800-E807,E826-E829,E830-E848,E929.0,E929.1,E850-E869,E880-E928,E929.2-E929.9
Suicide	X60-X84, Y87.0	E950-E959
Homicide	X85-Y09, Y87.1	E960-E969
Legal Intervention	Y35, Y89.0	E970-E978
Alzheimer's Disease	G30	331.0