



"The Road to Good Public Health"

Summary of Data Prepared for Sullivan County's Health Assessment Years 1990 - 2006

**Prepared by
Sullivan County Regional Health Department
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INTRODUCTION

The **Community Health Status Assessment** is one of four assessments the Sullivan County Health Council undertook as part of a renewed assessment of the county's state of health. To accomplish this, primarily three data sets were used: deaths for 1990-2006, inpatient (1998-2004) and outpatient (1997-2004) hospitalizations and results from the 2005 Behavioral Risk Factor Surveillance Survey. Age-adjusted rates were standardized to the US Census population of 2000. Trends, consequences, prevalence and incidence of rates and the acceptability of interventions were assessed and scored for each disease. What resulted was a list of Sullivan County's top health outcomes of concern. In addition to trend, the order of health outcomes was reviewed by age and sex. Other data sources consulted were the Census 2000, the American Community Survey (2005-2006), Blood Lead Surveillance Data, TN 2001-2005, Birth Registry Data, TN and Divorce Rates. Each graph indicates the year and source of data.

Notes: Some of the age-adjusted rates demonstrate minor differences than those that were presented at Health Council meetings: age-adjusted rates presented at the meetings were weighted using 20 age-groups. Age-adjusted rates in this document used 10 age-groups instead. Data available on the Tennessee Department of Health's Health Information Technology site offered two more recent years and it was felt that trends with more current data was valuable. Age-adjusted and Age-Standardized mean the same thing and both terms are used interchangeably in the graphs. In addition to the 2005-2006 deaths being added, rates of crime and some socioeconomic factors have been added. Also, throughout this document NE Region refers to the Northeast Region of Tennessee (Carter, Greene, Hancock, Hawkins, Johnson, Unicoi, and Washington counties). Furthermore, most of the work was done using 2004 data and therefore, the discussion refers to the 2004 reference point but sometimes there is a reference to the new 2006 data.

This document is a summary of all the data that were analyzed for the assessment. It does not contain everything that was presented to the Health Council but a good portion of it. Thought about the usefulness of each graph and its attached table of rates determined its inclusivity.

Organization of the Data

The data summary has been organized along the lines of Tennessee Institute of Public Health's **County Health Rankings Report** (<http://www.state.tn.us/tniph/>). The County Health Rankings annual report summarizes 31 measures of many aspects of a population's health which are combined to produce an index for each of Tennessee's 95 counties. They are ranked from healthiest (rank of 1) to least healthy (95). State authorities and local counties are encouraged to use the rankings as a tool for targeting resources for high risk areas and sub-groups of each county and since this report will be a driving force for policy change and grant funding, Sullivan County's Health Assessment data that correspond to the elements in the ranking report will be easy to find. Please note that results are presented by data source and do not follow disease. Therefore, to get a more complete picture of a disease, it is worth checking the index to find out where all relevant graphs might be for one disease.

The 31 measures are based on a model developed by Wisconsin's Population Health Institute (<http://www.pophealth.wisc.edu/uwphi/>). This model suggests that a population's health outcome can be predicted from a set of health determinants and how these determinants are distributed across a population. Interventions and policies can positively or negatively affect the health-determining factors. The overall measure is an equal combination of Health Outcomes and Health Determinants. The first

gives a picture of the present health status while the status of the latter foretells the status of a county's future health.

Overall measure = Health Determinants (50%) + Health Outcomes (50%)

Health Outcomes (50%)

Mortality (45%) potential years of life lost – rate of all premature deaths (before age 75)

Low Birth Weight (45%) less than 2500 grams – an important marker for a population's health, including health disparities

General Health Status (10%) Self-reported of general health status

Health Determinants (50%)

Health Care (10%)

Health Behaviors (40%)

Socioeconomic Factors (40%)

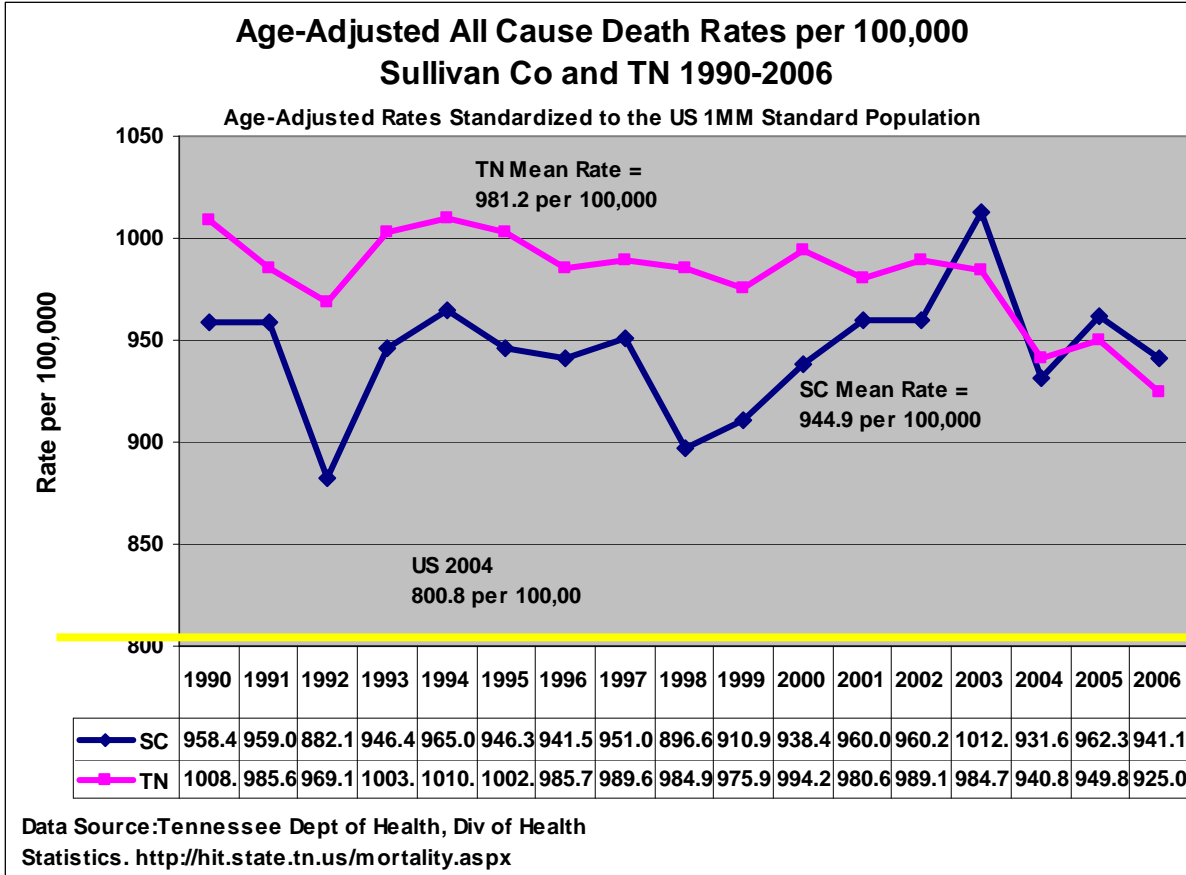
Physical Environment (10%)

The health determinants chosen have been shown to have a high correlation with a population's health status. The individual measures for each determinant and their weight is on the next page.

Note: graphs for health care and some of the environmental determinants are still being evaluated – many of which will be included in Sullivan County Health Profile (2008-09).

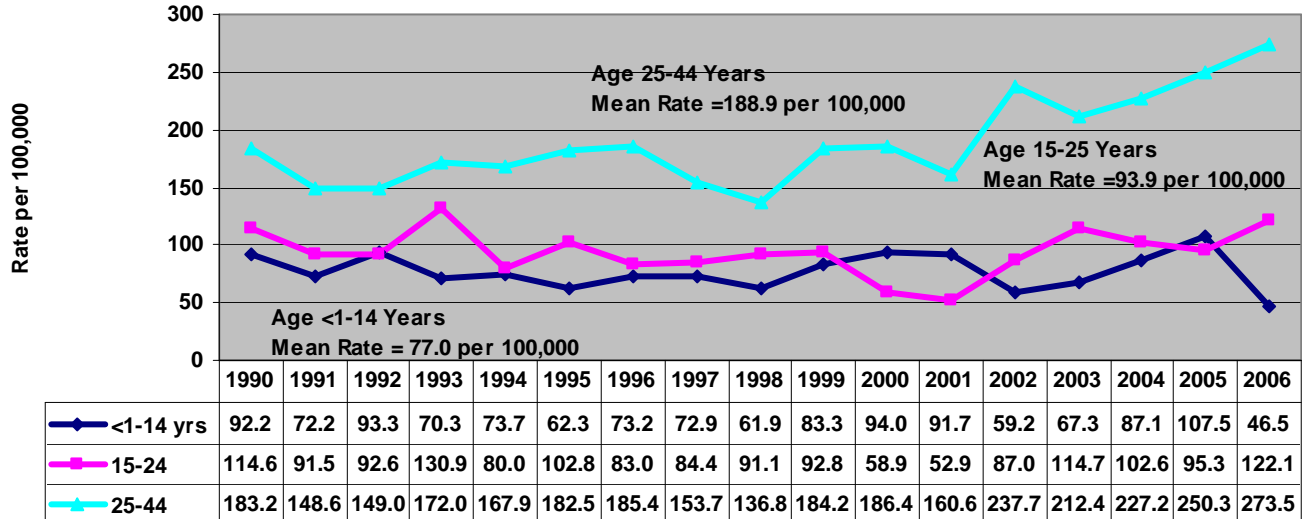
HEALTH OUTCOMES

DEATHS



In Sullivan County, the total death rate from All Causes was 931.6 per 100,000 in 2004 vs. the national and Tennessee All Cause rates of 800.8 and 981.2 per 100,000. On average over the past 17 years, deaths from All Causes was 18% higher than the national rate and 4% lower than the rate for Tennesseans.

All Cause Death Rates per 100,000 for 3 Age-Groups Sullivan Co, TN 1990-2006

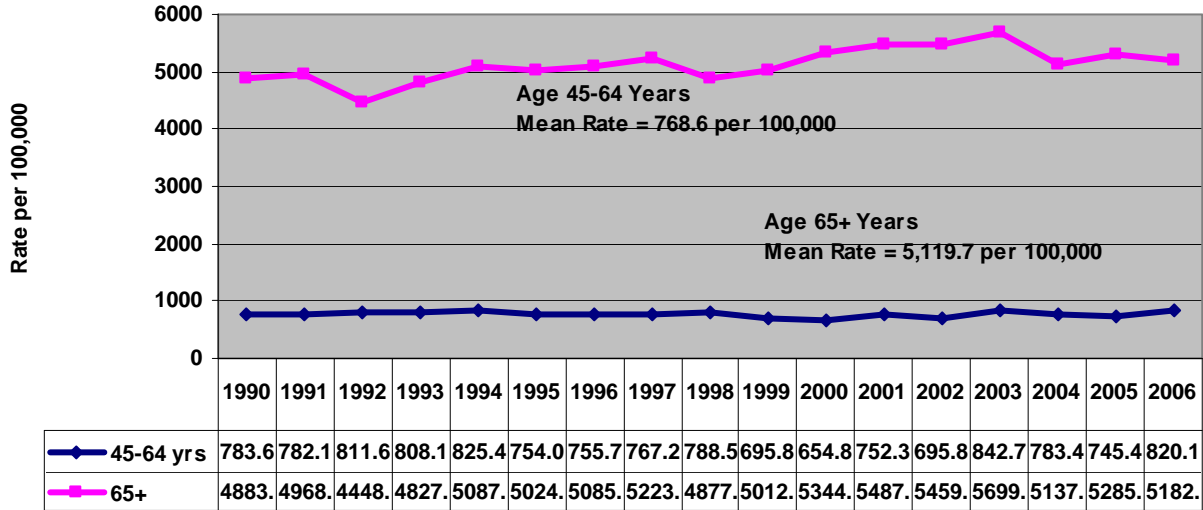


Data Source: Tennessee Dept of Health, Div of Health Statistics.

<http://hit.state.tn.us/mortality.aspx>

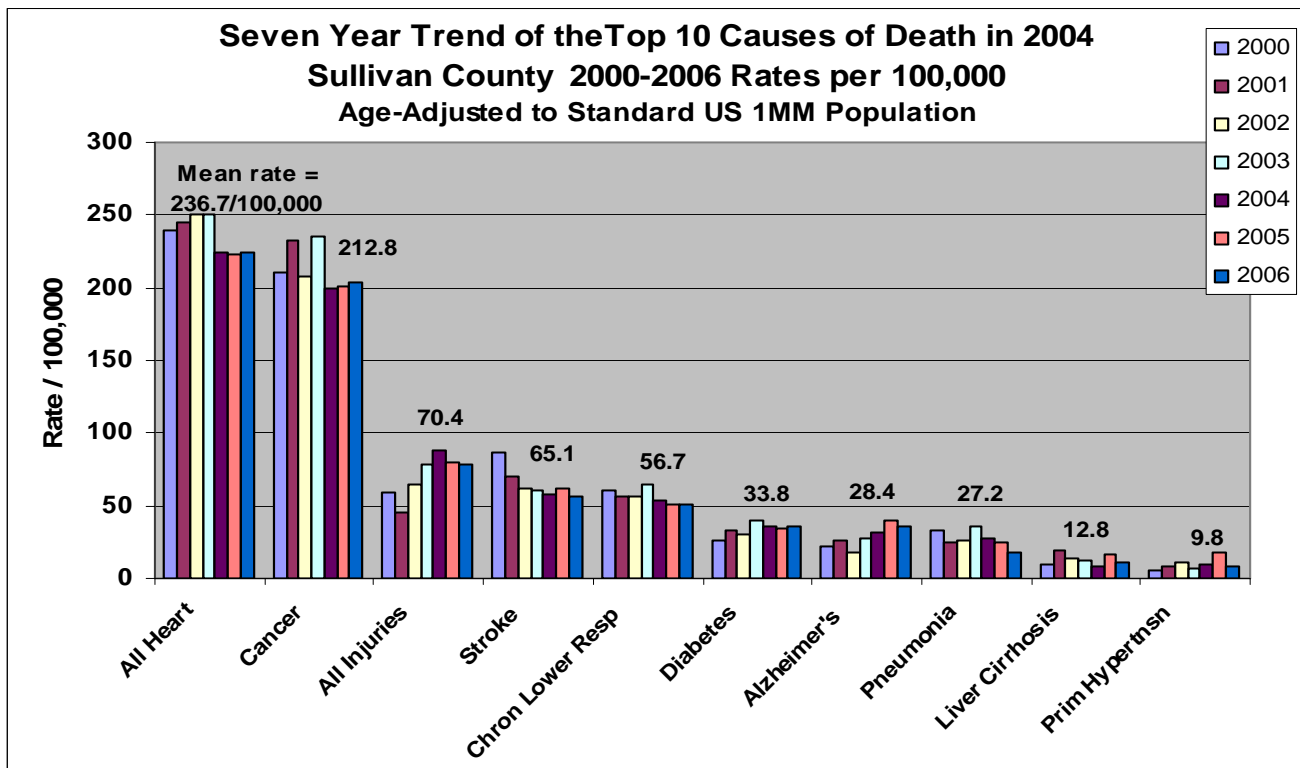
All Cause death rates in Sullivan County were fairly steady for those under 15 years of age with a 17-year average annual death rate of 77.0 per 100,000. However, 15-25 and 25-44 year olds died at an average of 93.9 and 188.9 per 100,000 per year. For the older age-groups, deaths from All Causes rose by average annual increases of 4% and 3.9%, respectively. Most notably, rates begin to climb for 25-44 year-olds in 1998, again in 2003 and steadily up until 2006. Death before the age of 75 is considered to be premature and is often referred to as Potential Years of Life Lost. The life lost represents one's quality of life and their contribution to society.

All Cause Death Rates per 100,000 for 2 Agegroups Sullivan Co, TN 1990-2006



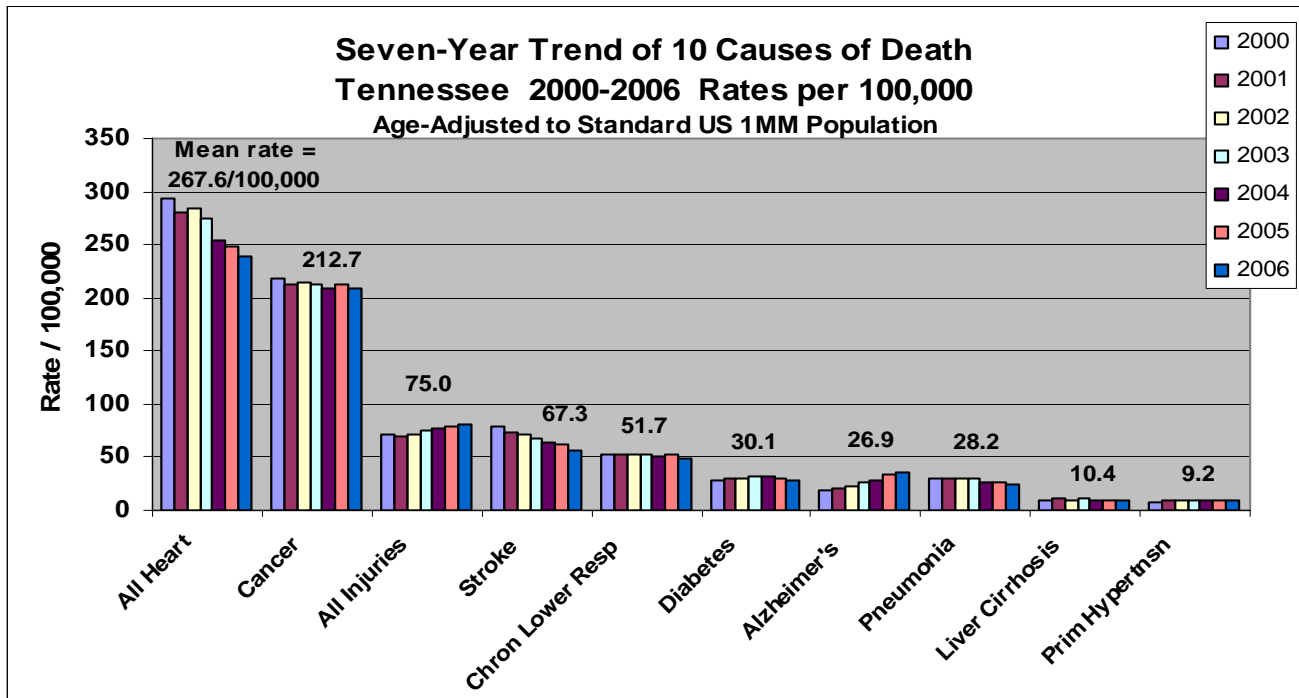
Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

The 17-mean death rate from All Causes for 45-64 year olds was 768.6 per 100,000. The 2006 rate of 820.1 per 100,000 is up 4.7% from 1990. The increase is not immediately apparent because the scale of the graph is accommodating the high rates among seniors. However, this real increase represents an increase in the Potential Years of Life Lost. Similarly, death at 65 -74 years old is considered premature. Death rates among seniors aged 65-plus have risen at an average annual rate of 5,110.7 per 100,000 and rates have been increasing annually by 6.1%.



Data Source: Tennessee Dept of Health, Div of Health Statistics. <http://hit.state.tn.us/mortality.asp>

Sullivan Co	2000	2001	2002	2003	2004	2005	2006	Mean Rate
All Heart	240.1	245	250.4	250.2	224.3	223.2	223.7	236.7
Cancer	210.5	232	208.3	234.7	199.5	200.6	204.2	212.8
All Injuries	58.6	45	64.7	79	87.8	80	77.9	70.4
Stroke	86.6	70.8	61.4	60	57.6	62.3	57.1	65.1
Chron Lower Resp	61.1	57.1	56.9	64.6	54.2	51.6	51.1	56.7
Diabetes	26.6	33.1	30	40.4	35.7	34.9	35.9	33.8
Alzheimer's	21.4	26.3	17.9	27.2	31.2	39.4	35.2	28.4
Pneumonia	32.7	24.7	26.8	36.3	26.9	24.8	18.3	27.2
Liver Cirrhosis	9.6	18.9	13.1	12.2	8.1	16.4	11.5	12.8
Prim Hypertnsn	5.4	7.6	11.5	7.3	9.9	17.9	8.8	9.8



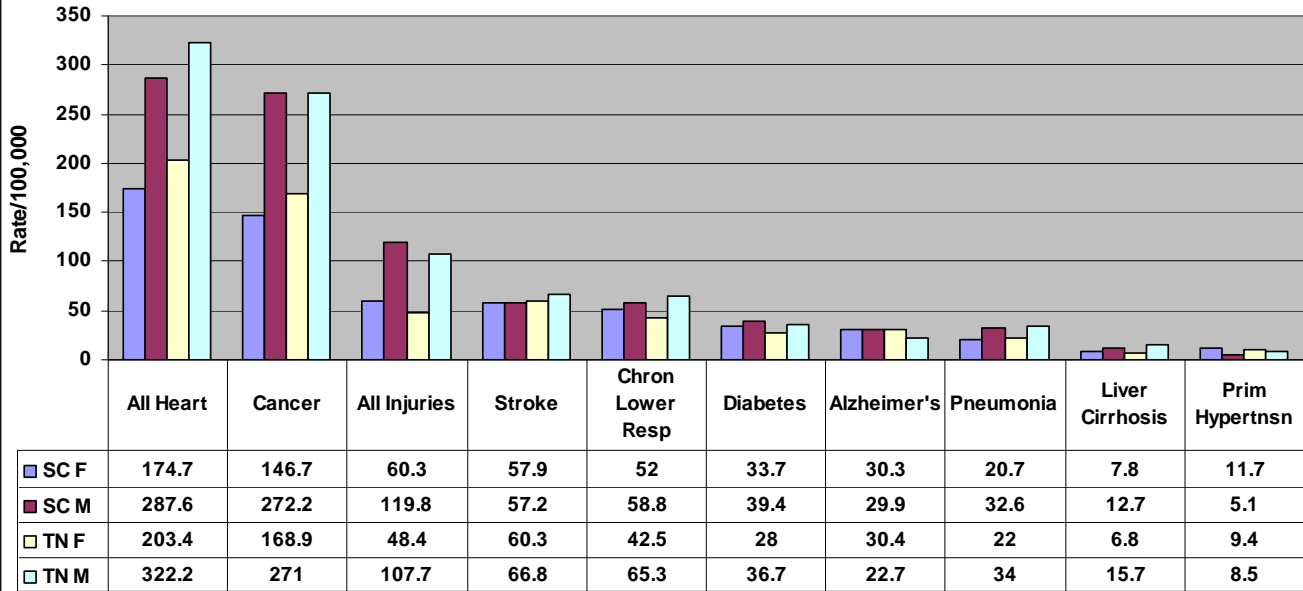
Data Source: Tennessee Dept of Health, Div of Health Statistics. <http://hit.state.tn.us/mortality.asp>

	2000	2001	2002	2003	2004	2005	2006	Mean Rate
All Heart	292.8	280.4	284.8	273.9	254	248.1	238.9	267.6
Cancer	218.3	213.5	214.8	213	208.5	212	208.4	212.6
All Injuries	72	70.4	71.2	75.2	77	79	80.4	75.0
Stroke	78.4	73	70.8	67.9	63.1	61.7	56.1	67.3
Chron Lower Resp	52	52.3	52.6	52.7	50.6	53	48.8	51.7
Diabetes	28.4	30.8	30.3	31.7	31.5	30.4	27.7	30.1
Alzheimer's	19.2	21.2	23.5	26.1	28.1	34.8	35.5	26.9
Pneumonia	30.1	29.3	30.2	30.6	26.3	26	25.1	28.2
Liver Cirrhosis	10.3	10.5	10.2	11.6	10.2	10.1	9.8	10.4
Prim Hypertnsn	7.2	9.7	9.4	9.9	9.3	9.9	8.9	9.2

The above two graphs show Sullivan County's top causes of death and the rates experienced at the state level 2000 – 2006. 17-year mean rates are also indicated. In Sullivan County, Heart and Cancer deaths (224.3+199.5)/931.6 account for 45.5% of All Causes and this is slightly less than their contribution in Tennessee (254+208.5)/940.8 = 49.2%. In 2004, Sullivan County rates of four diseases exceed those of Tennessee's: All Injuries, Chronic Lower Respiratory Disease, Diabetes and Alzheimer's Disease. All Injuries dropped from the 2004 rate of 87.8 per 100,000 to 77.9 per 100,000 in 2006. That year, Tennessee exceeded Sullivan County in All Injuries (TN's rate 2006 80.4 per 100,000). The gap between Sullivan County and Tennessee closed for Alzheimer's disease. However, the gap in rates for Chronic Lower Respiratory Disease and Diabetes remained:

	Sullivan Co		Tennessee		Difference	
	2004	2006	2004	2006	2004	2006
	Rate	Rate	Rate	Rate	%	%
Chronic Lower Respiratory Disease	54.2	51.1	50.6	48.8	6.6	5.9
Diabetes	35.7	31.9	31.5	27.7	11.8	13.2

Top Ten Causes of Death Rates per 100,000, by Sex
Sullivan Co + Tennessee, 2004
Age-Adjusted Rates Standardized to the US 1MM Standard Population



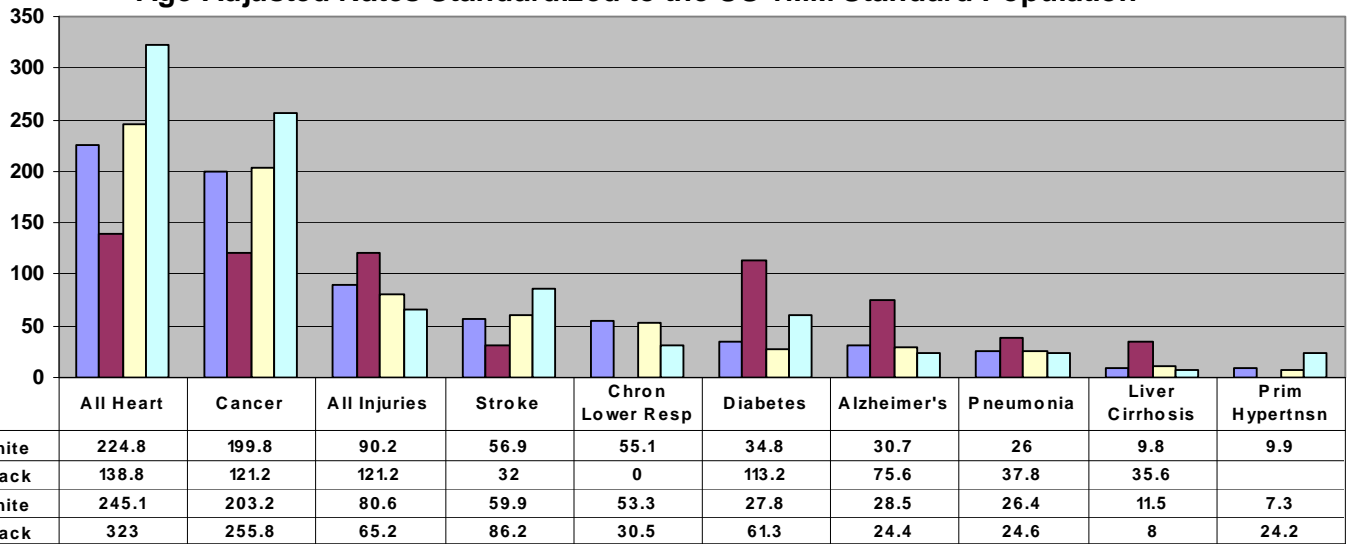
Data Source: Tennessee Dept of Health, Div of Health Statistics.
 Death Statistical System, 1990-2004, Nashville, TN

Data Source: Tennessee Dept of Health, Div of Health Statistics. <http://hit.state.tn.us/mortality.asp>

In Sullivan County, more men died from All Heart, Cancer, All Injuries, Chronic Lower Respiratory Disease and Pneumonia than did Sullivan County women. This is also true for Diabetes and Liver Disease and Cirrhosis but the rates are not so discrepant. Men and women die equally from Stroke and Alzheimer's while Sullivan County women die more often from Primary Hypertension than do their male counterparts. Death rates for Tennessee males exceeded or were the same as rates for Sullivan County males except for All Injuries and Diabetes. Sullivan County females had higher rates of death from All Injuries, Chronic Lower Respiratory Disease, Diabetes, Liver Disease and Cirrhosis and Primary Hypertension.

Top Ten Causes of Death Rates per 100,000, by Race Sullivan Co + Tennessee, 2004

Age-Adjusted Rates Standardized to the US 1MM Standard Population



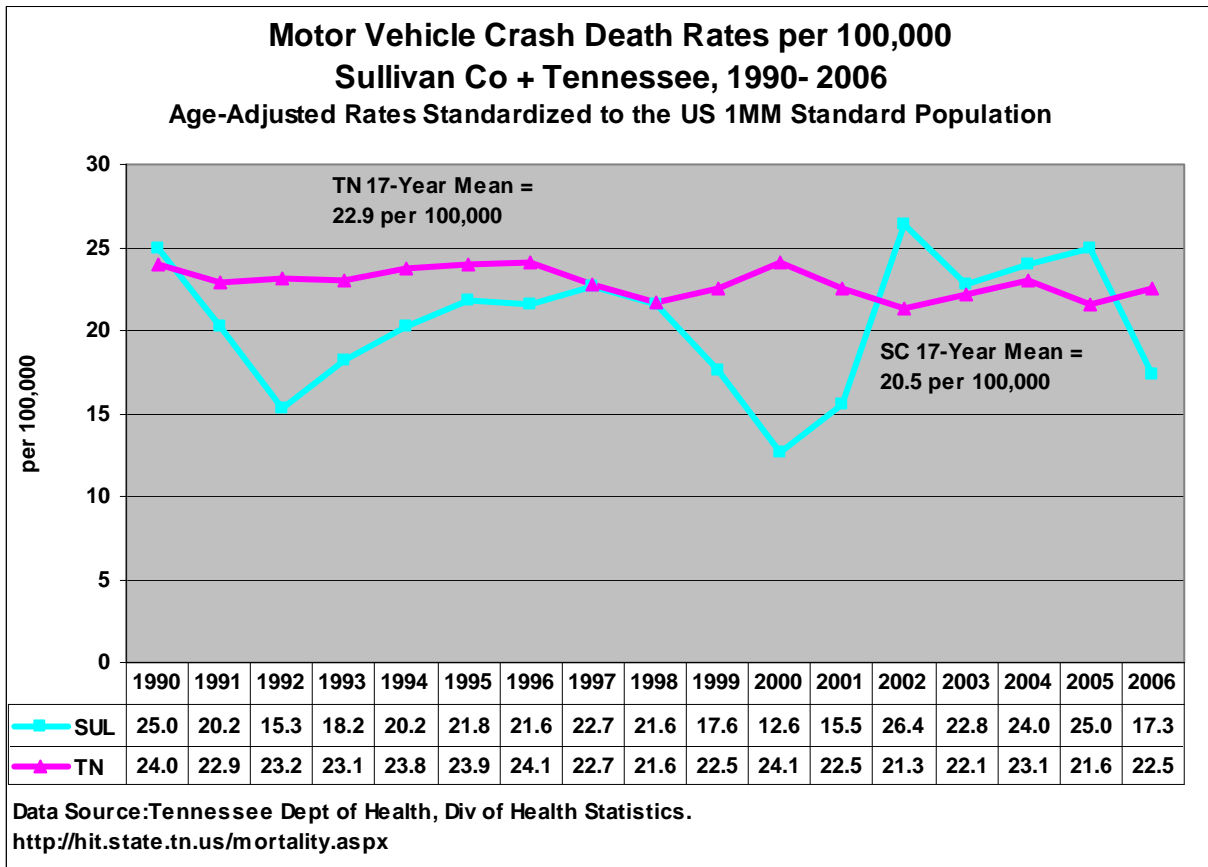
Data Source: Tennessee Dept of Health, Div of Health Statistics. Death Statistical System, 1990-2004, Nashville, TN

Rates of death for races other than Whites in Sullivan County can be unstable because of other groups account for only a small proportion of the total population. However, looking at the top causes, it is clear that Blacks die more often than do Whites from All Injuries, significantly more often from Diabetes, Alzheimer's and Liver Disease and Cirrhosis and slightly more often from Pneumonia.

**Frequency and Rate per 100,000 of the Leading Causes of Death by Age-Group
Sullivan County and TN, 2004**

	SULLIVAN COUNTY			TENNESSEE		
	#	Rate	Change* %	#	Rate	Change* %
Under 1 year						
All Causes	15	851.3		686	874.5	
1 – 14 Years						
All Causes	8	31.0	-0.9	247	22.1	-2.9
Accidents (mv, drowning, fire, non-transpt)	6	23.3	2.1	119	10.7	-2.9
15 – 24 Years						
All Causes	18	101.3	0.8	890	110.1	-0.3
Motor Vehicle Accidents	10	78.8	3.2	331	41.0	-0.7
Accident guns, Fire, Poisonings, Other	5	28.2	14.6	207	25.6	2.9
25 – 44 Years						
All Causes	91	224.3	3.0	3,432	202.7	0.9
Motor Vehicle Accidents	11	27.1	1.6	421	24.9	-0.7
Undetermined Intent	11	27.1	20.1	69	4.1	8.0
Poisonings, Exposure Noxious Substances	10	24.7	2.8	268	15.8	0.9
Suicide	7	17.3		292	17.2	
45 – 64 Years						
All Causes	336	787.0	-0.1	11,825	806.6	-0.6
Cancer	114	267.0	1.8	3,741	255.5	1.7
Heart	67	156.9	-0.8	2,932	200.0	1.3
Chronic Lower Respiratory Disease	18	42.2	3.2	517	35.5	0.9
Diabetes Mellitus	17	39.8	4.7	466	31.8	3.1
Stroke	12	28.1	-1.2	416	28.4	-1.7
65 Plus Years						
All Causes	1,295	5,110.0	1.1	38,558	5,256.4	0.4
Heart	354	1,396.8	-1.3	11,460	1,562.3	-1.2
Cancer	274	1,081.1	1.4	8,307	1,132.4	0.3
Stroke	100	394.6	0.6	3,146	428.9	-0.7
Chronic Lower Respiratory Disease	89	351.2	6.7	2,409	328.4	4.2
Alzheimer's	59	232.8	13.8	1,589	216.6	11.8
Diabetes Mellitus	46	181.5	6.0	1,331	181.5	4.3
Pneumonia	42	165.7	-2.6	1,317	179.5	-1.5
Non-transport Accidents (falls, unspecified)	26	102.6	6.7	670	91.3	3.4

*Average Annual % Change using 3-Year Rolling Average



Motor Vehicle Accidents

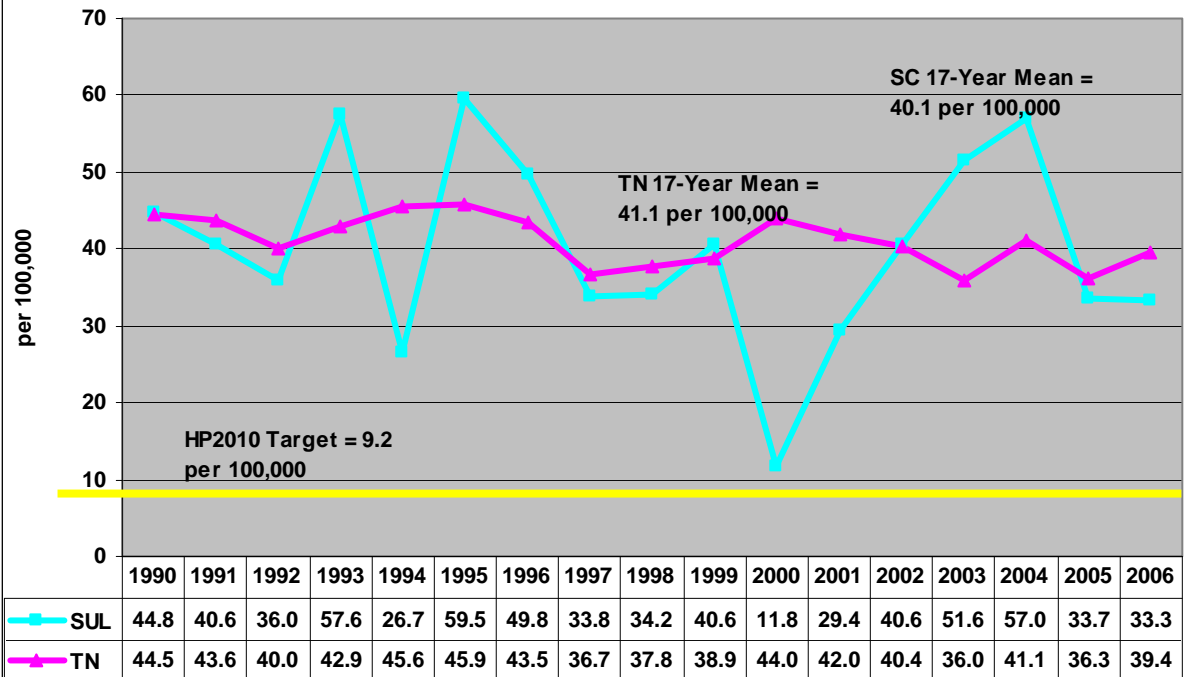
Motor Vehicle Accidents (MVA) -- transport and non-transport -- are a major cause of morbidity and mortality in Sullivan County. This cause of death and illness falls under the disease classification of Injuries. Also included in Injuries is Falls. Falls is a significant cause of hospitalization but it is not a leading cause of death as are MVAs. Potential Years of Life Lost escalated this category to rank second in the disease matrix.

Mortality

In 2004, Sullivan County residents and Tennesseans died at rates of 23.4 and 23.1 per 100,000 (age-standardized) from motor vehicle accidents. The Health People 2010 Objective for this cause of death is to reduce deaths for all age-groups to 9.2 per 100,000. Achieving this goal would require a 61% drop in the rate of fatal road accidents.

MVAs is the leading cause of death in Sullivan County and Tennessee among children aged 15-24 years and adults 25-44 years old. The most significant cause of death for children 1-14 years is a broader category of All Accidents but within this grouping, MVAs is the single leading cause.

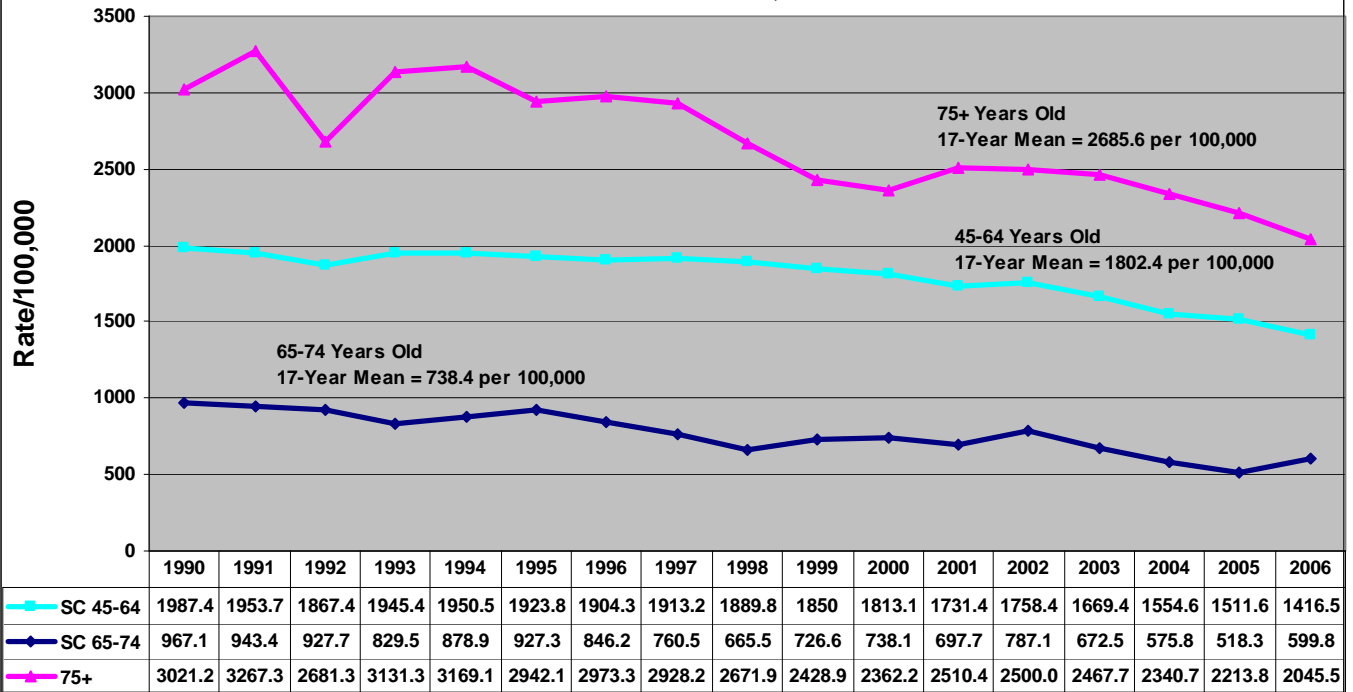
**Motor Vehicle Crash Crude Death Rates per 100,000
Age 15-24 Years, Sullivan Co + Tennessee, 1990 - 2006**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

15-24 Year Olds Both Sullivan County and Tennessee rates remained similar between 1990 and 1999 but Sullivan County’s rate between 2000 and 2004 climbed steadily with an average percent change of 3.2% per year; during this time, TN’s rate dropped slightly at an average of 0.7% per year. In 2004, there were 10 deaths in this age group which produces a rate of 78.8 per 100,000 versus TN’s rate of 41.0 per 100,000.

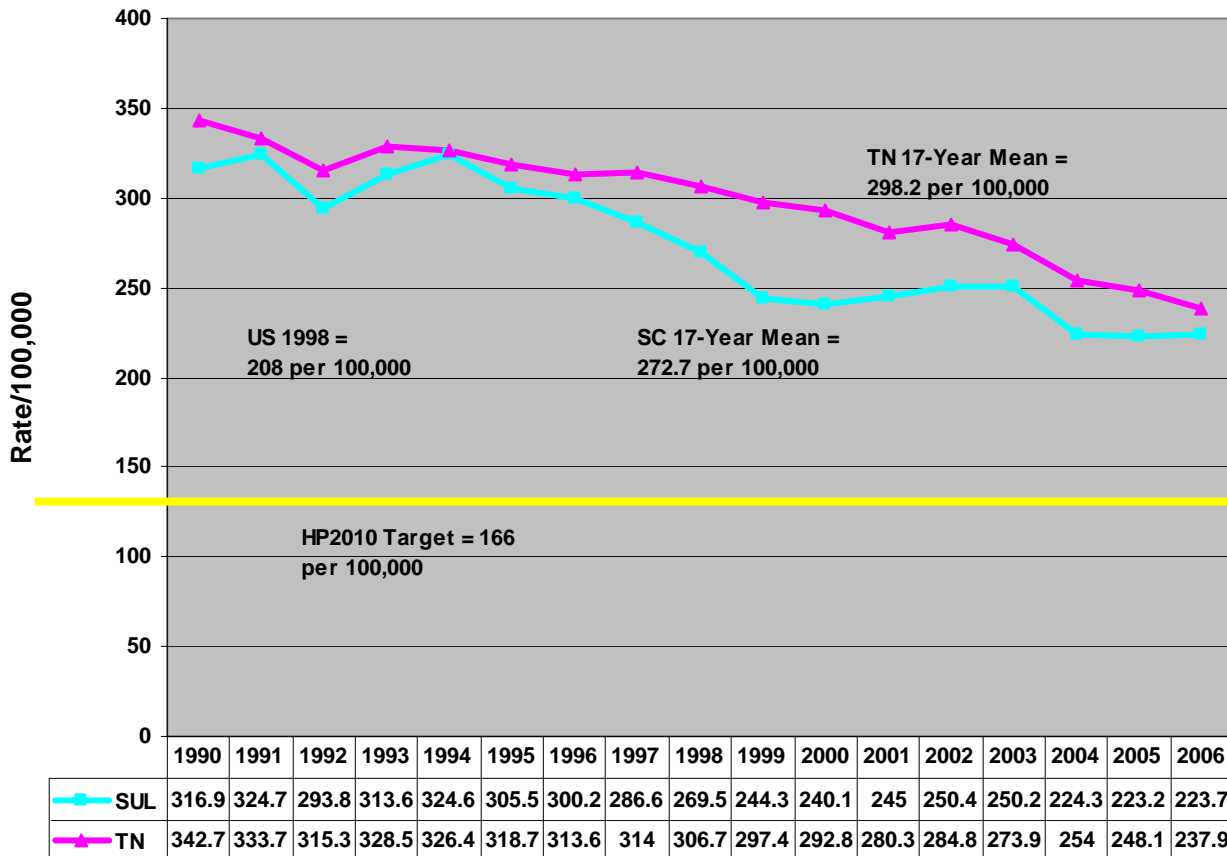
Age-Specific All Heart Death Rates per 100,000 Ages 45-64, 65-74 and 75+ Years Sullivan Co + Tennessee, 1990 - 2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

25-44 Year Olds Both the direction and rate of change have not been significant over the 15 year period of 1990 – 2004 and the two regions have similar mean rates (SC 22.5 and TN 25.7 per 100,000). However, rates also climbed between 2000 and 2004 by 3.2% per year in this group in Sullivan County only. In 2004, there were 11 deaths resulting in a rate of 27.1 per 100,000: these deaths contribute heavily to the measure Potential Years of Life Lost.

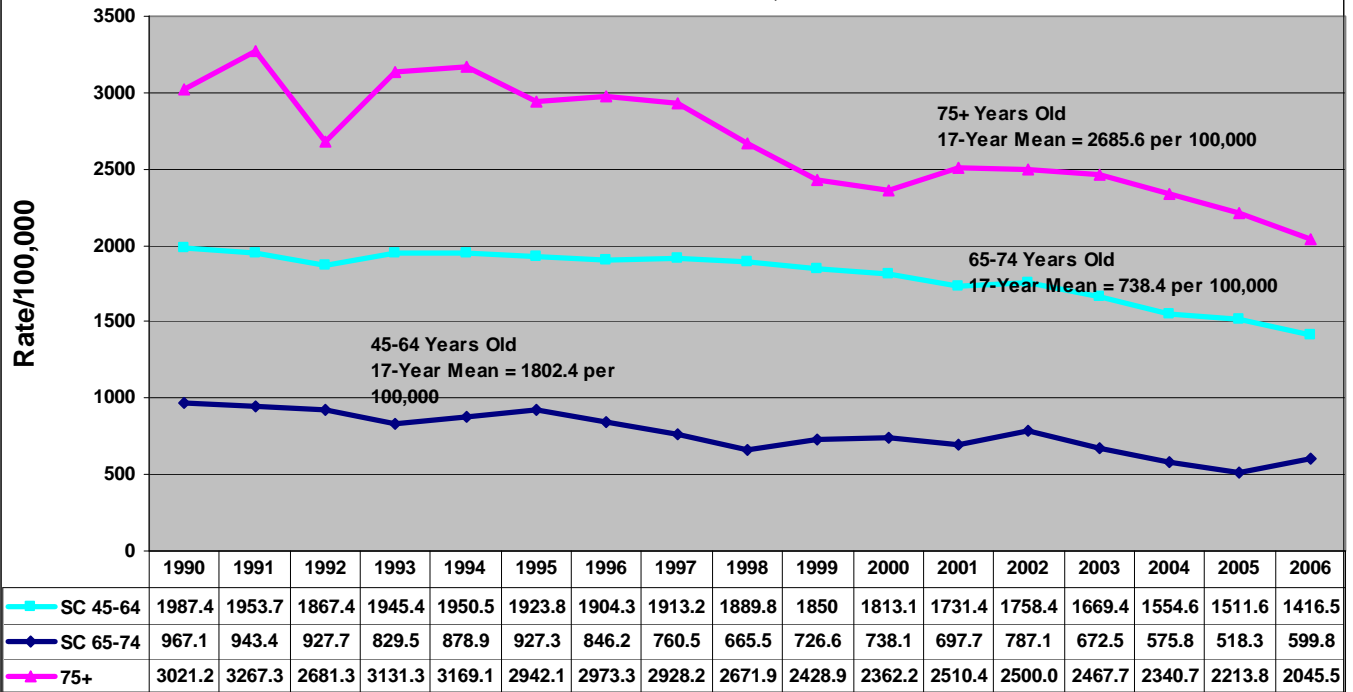
Age-Standardized All Heart Death Rates per 100,000 1990-2006 Sullivan Co, NE TN, TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

In Sullivan County, All Heart disease deaths has been dropping consistently for the past 17 years: the average annual percent change was -2.2% in Sullivan County and -2.4% in Tennessee. In 1990, the rate for Sullivan County was 316.9 per 100,000 versus TN's rate of 342.7 per 100,000 and in 2006, SC residents died from All Heart disease at 223.7 per 100,000 versus TN's rate of 237.9 per 100,000. This represents a drop of 30% in Sullivan County and 26.1% in Tennessee. Despite this encouraging trend, Sullivan's rate of 223.7 per 100,000 in 2006 is 7.5% higher than the national rate of 208 per 100,000 in 1998 and 34.8% greater than the Healthy People 2010 goal of 166 per 100,000.

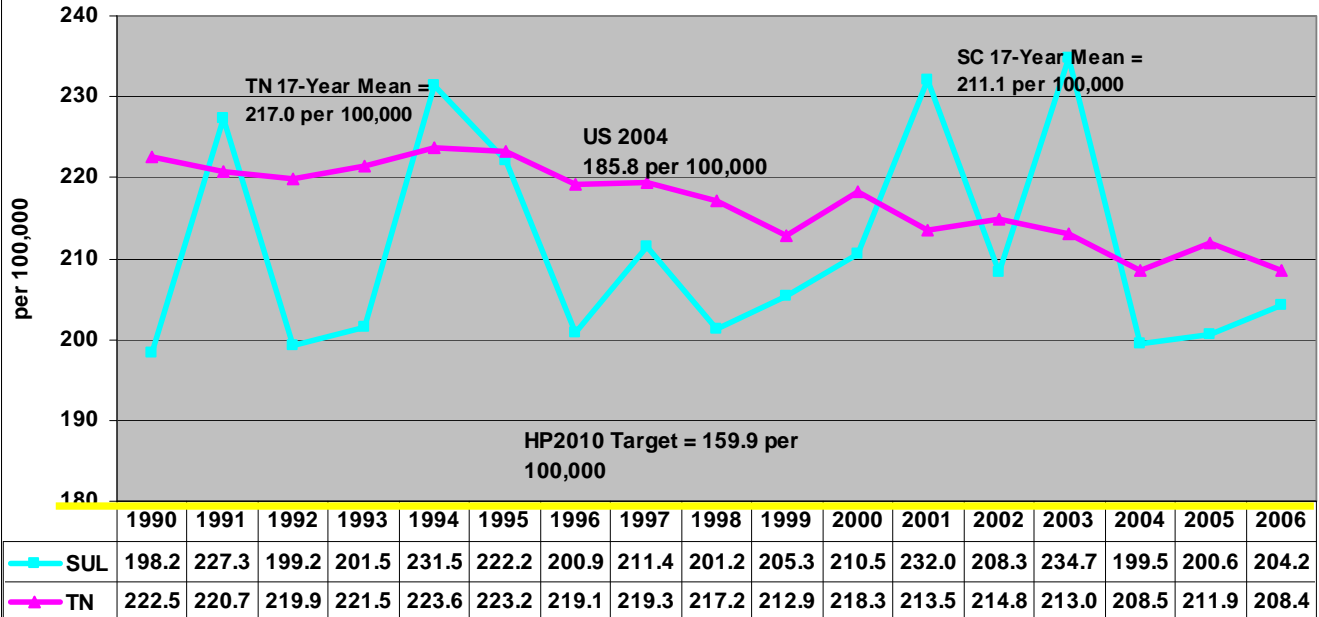
Age-Specific All Heart Death Rates per 100,000 Ages 45-64, 65-74 and 75+ Years Sullivan Co + Tennessee, 1990 - 2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

In Sullivan County, Heart Disease is the second leading cause of death for 45-64 year-olds and the leading cause for seniors (65+ years). People between 45-64 years of age die from Heart Disease more than twice as often as 65-74 year olds and about half the frequency of the rate for those aged 75+ years.

**Age-Standardized All Cancers Deaths Rates per 100,000
1990-2006 Sullivan County and TN**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Cancer of any part of the body is the second leading cause of death. Tennessee’s rate of 208.5 per 100,000 is 4.5% higher than Sullivan County’s All Cancer death rate of 199.5 per 100,000. Over the past 17 years, Tennessee’s rate of death from this cause has been dropping slightly at -.4% per year versus the marginal increase in Sullivan County of +.6% per year. During this time period, All Cancer death rates dropped 3% in Sullivan County and 6.4% in Tennessee. In 2004, Sullivan County’s death from Cancer rate was roughly 10% higher than the national rate of 185.8 per 100,000 in 2004 and 27.7% higher than the Healthy People 2010 goal of 159.9 per 100,000.

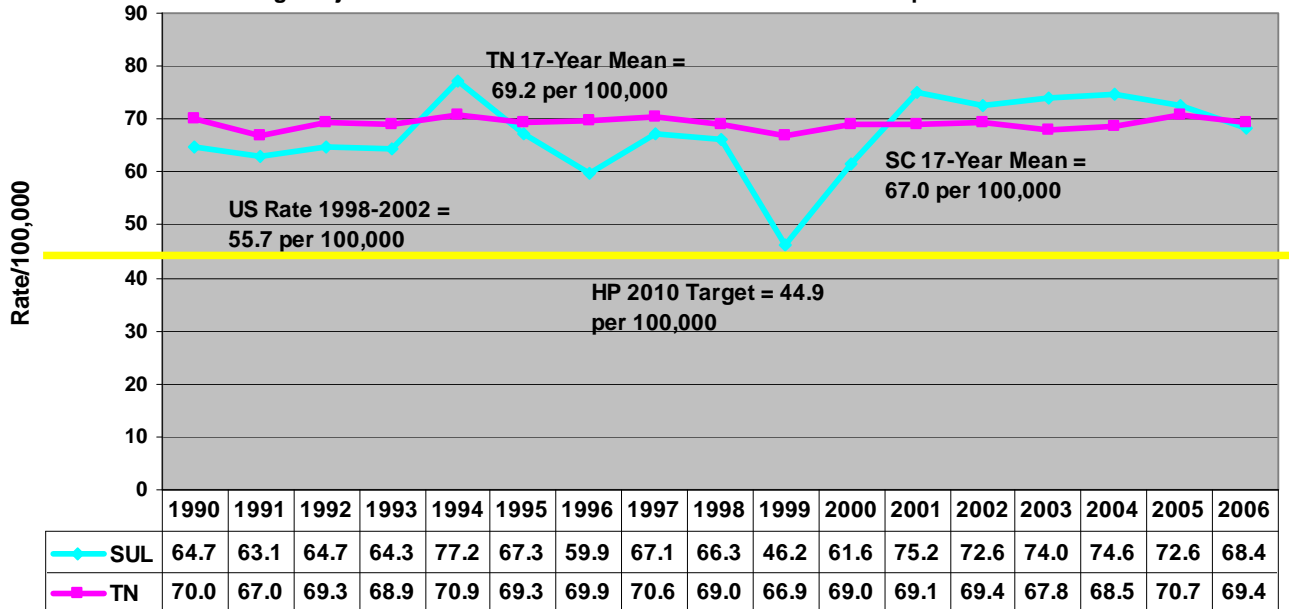
While the change in age-adjusted rates in Sullivan County is minimal, crude rates (not shown here) show a 20% increase in the deaths from all Cancers from 1990 to 2004. One explanation for this increase may be due to migration into the County.

In 2004, the five leading causes of cancer death are cancer of the Lung, Breast, Prostate, Colon and Pancreas. Lung, Colon, Breast and Prostate cancers share common, modifiable risk factors, such as a diet low in fruits and vegetables, excess alcohol, overweight/obesity and lack of physical exercise. Trends for death rates from these four cancers follow.

Age-adjusted Lung Cancer Deaths per 100,000

1990-2006, Sullivan County and TN

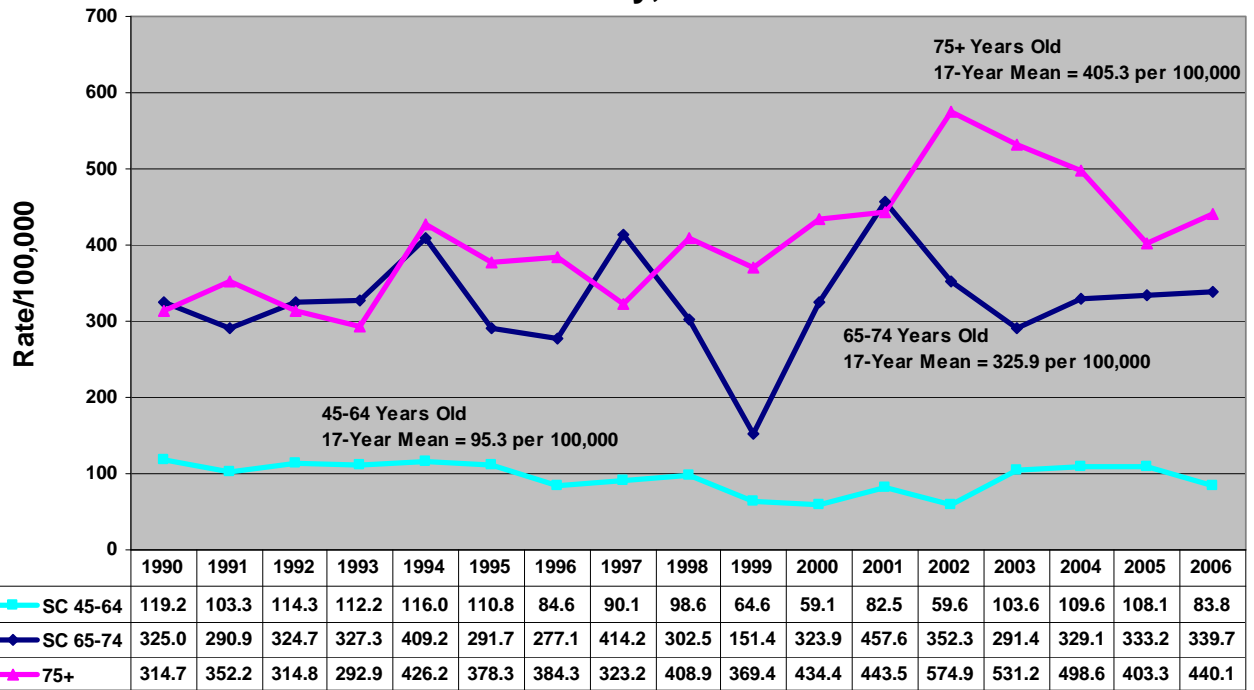
Age-Adjusted Rates Standardized to the US 1MM Standard Population



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Lung cancer is the most common cause of cancer. In 2006, residents of Sullivan County died from lung cancer at a rate of 68.4 per 100,000. Lung Cancer death rates are roughly 2.5 times the rate of death from Prostate Cancer and 3.5 times greater than the rate of death from Breast Cancer. The 17-year mean rate of 67.0 per 100,000 in Sullivan County is 3.2% less than TN’s 17-year rate of 69.2 per 100,000. There is no doubt that the use of tobacco is the major factor driving this rate.

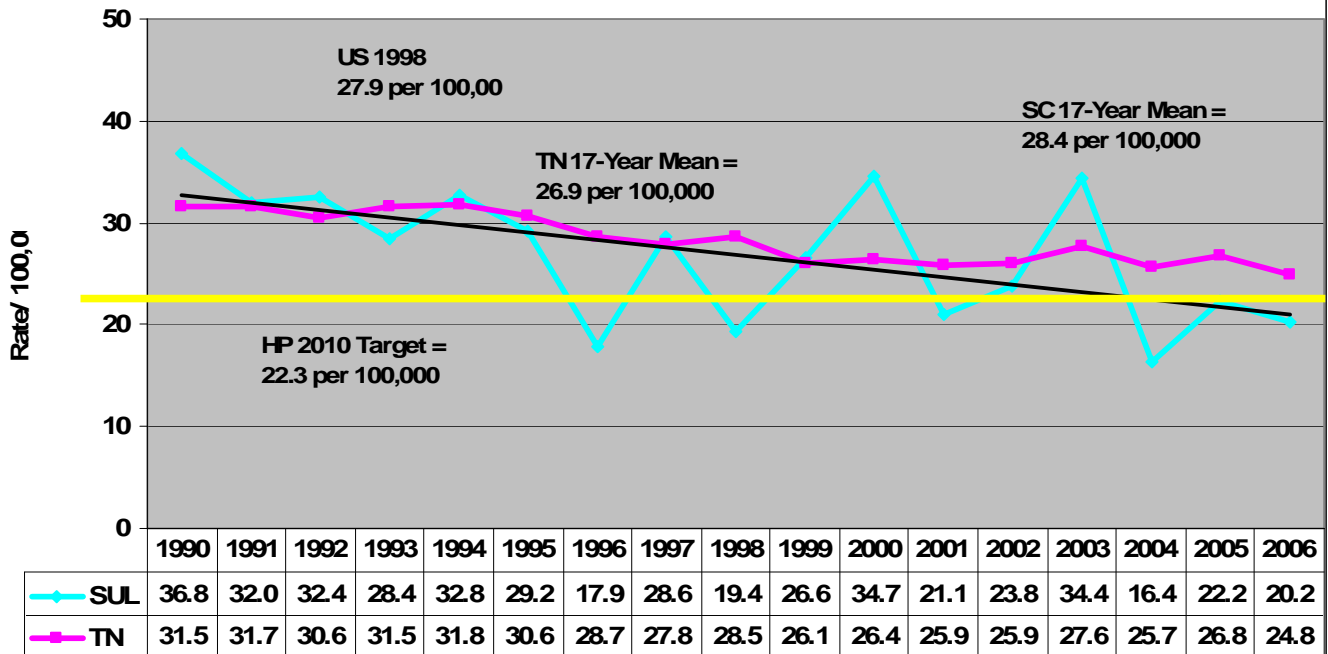
Age-Specific Lung Cancer Death Rates per 100,000 Ages 45-64, 65-74 and 75+Years Sullivan County, TN 1990-2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Death rates from Lung Cancer for 65-74 and 75+ year-olds are more than 3.5% and 4.3% higher than deaths for 45-64 year-olds. The increase in rates being proportionate to the increase in age reflects the length of time a person is exposed to smoke increases likelihood of cancer developing and/or manifesting itself.

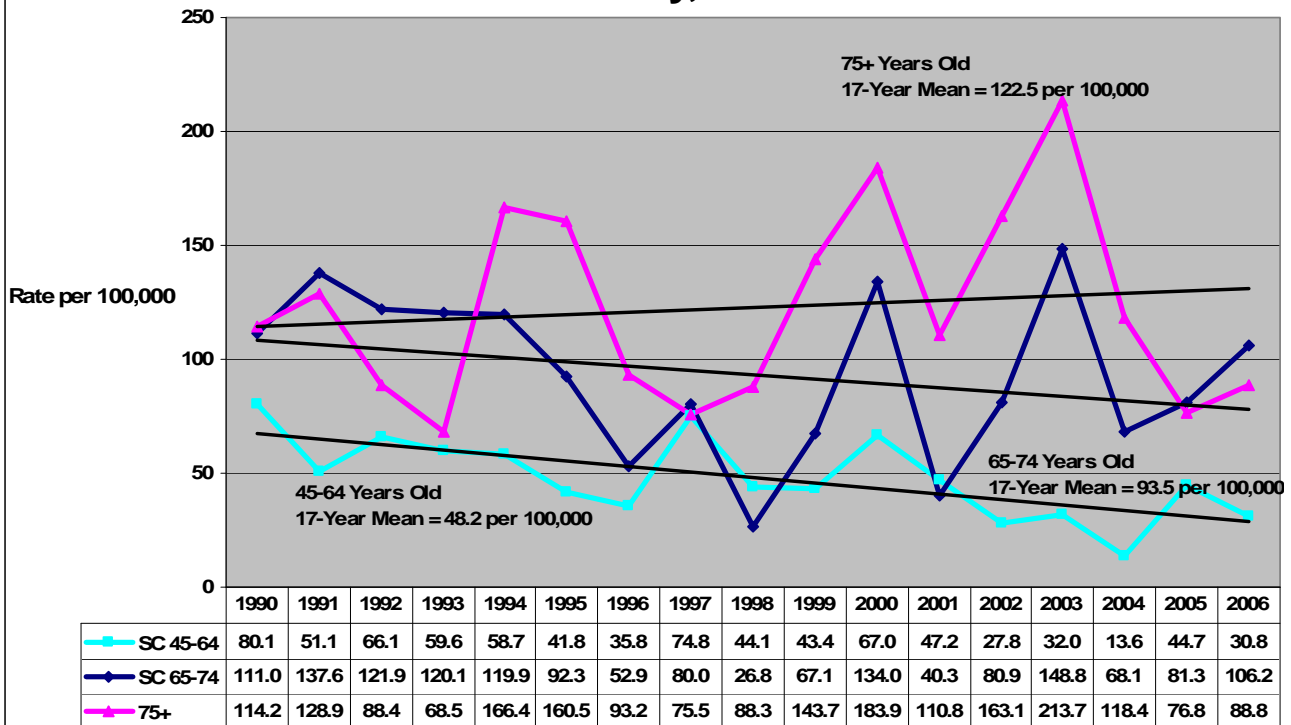
Age-Adjusted Breast Cancer Death Rate per 100,000 Females 1990-2006 Sullivan County and TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

In the United States, breast cancer is the most common cancer in women. Since 1990, death rates from breast cancer in Sullivan County have been dropping. Fluctuations are probably a function of small numbers rather than any significant change. Between 1990 and 2006, rates dropped from 36.8 to 20.2 per 100,000 females – a decline of 45.1%. This progress is likely due to increased screening with mammography, since detection of this cancer at earlier stages increases a women’s likelihood of survival. Since 2004, Sullivan County has met the Healthy People 2010 target of 22.3 breast cancer deaths per 100,000.

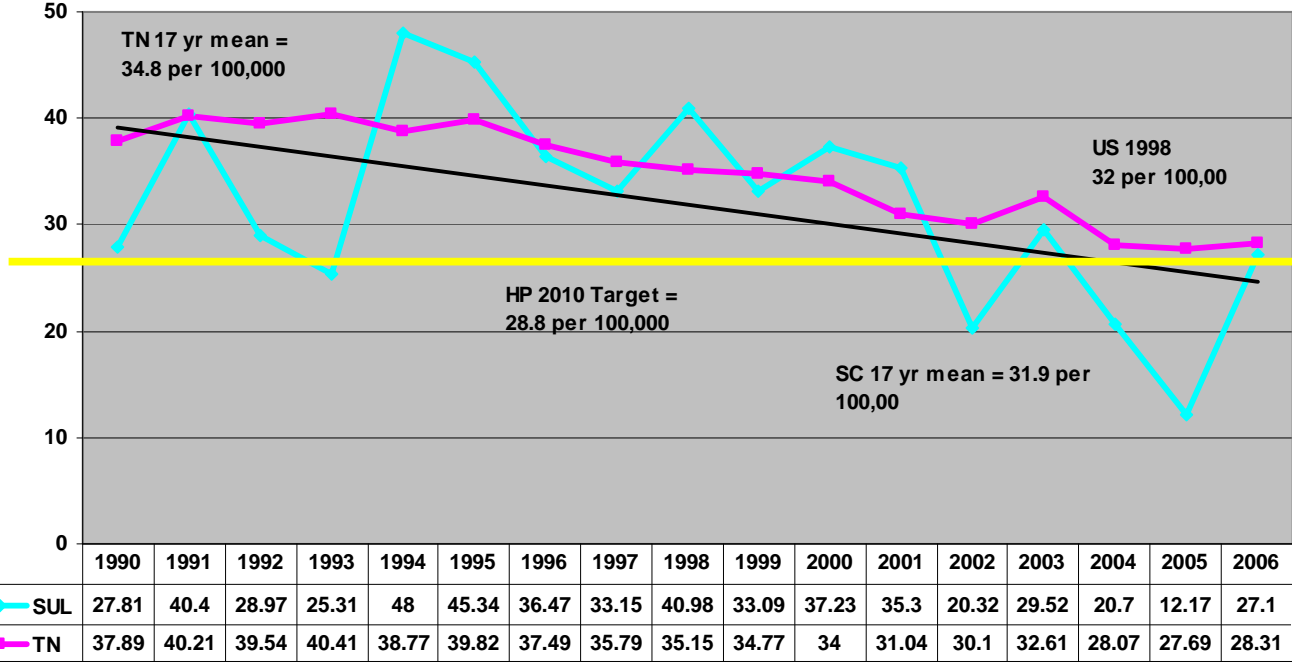
Age-Specific Breast Cancer Death Rates per 100,000 Females, Ages 45-64, 65-74 and 75+Years Sullivan County, TN 1990-2006



Data Source: Tennessee Dept of Health, Div of Health Statistics. <http://hit.state.tn.us/mortality.asp>

Looking at the trends and corresponding regression lines for women 45-64, 65-74 and 75+ years old, it is clear that rates for those under 75 years seem to be slowly declining while rates for older seniors are increasing. Age is an important risk factor for breast cancer and when this cancer is detected at a younger age, early treatment is successful; clinical trials have shown that this does not hold true for women in the oldest age-group.

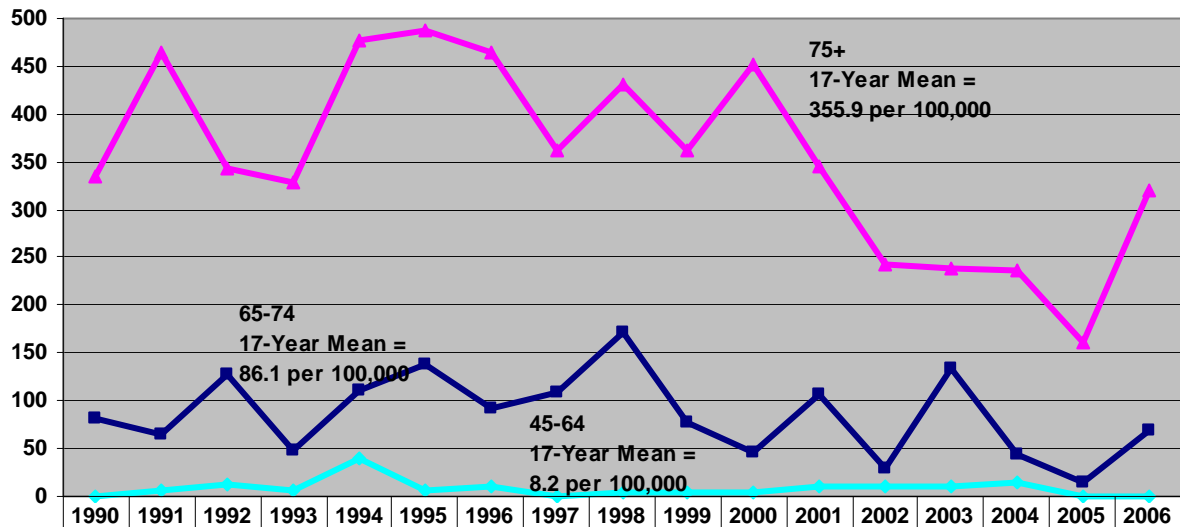
Age-Adjusted Prostate Cancer Death Rates per 100,000 Males Sullivan Co and TN 1990-2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

In Sullivan County Prostate Cancer is the second most common cause of cancer death in males. There has been no net change in standardized rates between 1990 and 2006 (27 per 100,000). The average annual percent change is 8.4% per year but this fluctuation is really a result of unstable (small) numbers; the dark blue trend line shows a definite decline and reflects Tennessee’s trend. Tennessee’s mean rate of 34.8 per 100,000 is 9% higher than Sullivan’s 17-year mean of 31.9 per 100,000. This mean rate is approximately 11% higher than the Healthy People 2010 goal of 28.8 per 100,000. The decline in deaths is most likely attributable to the increase in screening with digital prostate exams (DPE) and prostate-specific antigen (PSA) blood test.

Age-adjusted Prostate Cancer Deaths per 100,000 Males 1990-2006, Sullivan County, TN

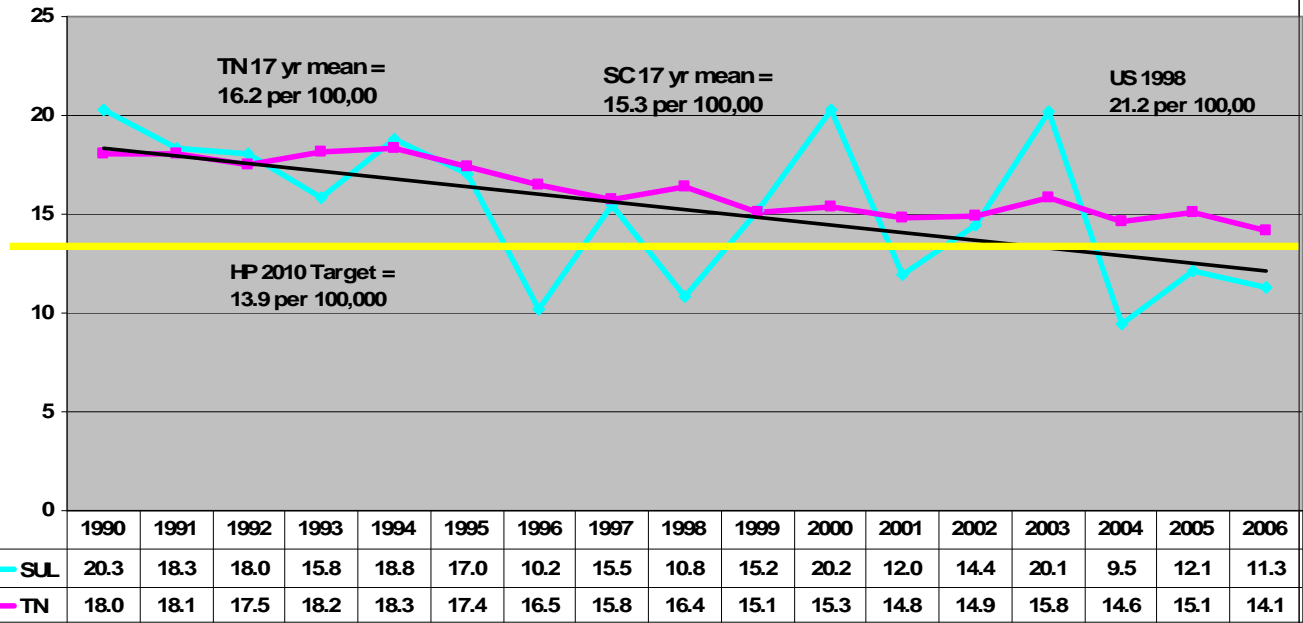


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
45-64 yrs	0.0	6.1	11.9	5.8	40.1	5.6	10.9	0.0	5.2	5.1	5.1	10.0	9.7	9.7	14.4	0.0	0.0
65-74 yrs	82.2	65.3	128.4	47.4	110.0	139.1	92.6	108.2	170.5	77.3	45.5	105.9	29.9	133.0	44.0	14.4	70.0
75+ yrs	334.8	464.0	342.6	329.5	477.7	487.1	464.2	362.0	430.3	361.8	452.4	345.6	242.7	239.1	236.1	161.2	319.1

Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Prostate cancer is common in males aged 65 years and older. Sullivan County males (ages 65-74 years) die from prostate cancer at an average rate of 86.1 per 100,000 whereas males 75 years and older, die from this type of cancer 4 times more often (355.9 per 100,000).

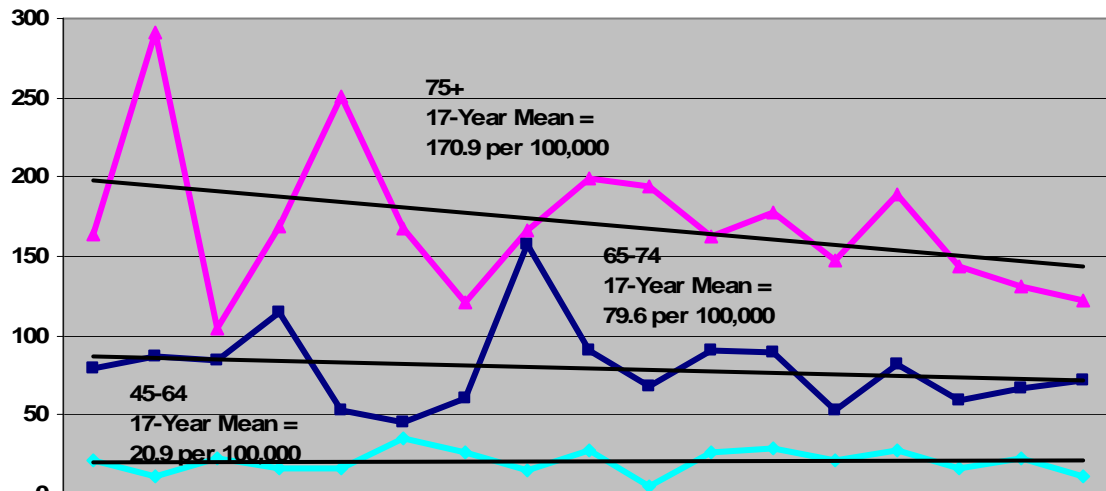
**Age-Adjusted Colon Cancer Death Rates per 100,000
Sullivan Co and TN 1990-2006**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

In Sullivan County, death from Colon Cancer is the 4th leading cause of cancer-related death. Both Sullivan County and Tennessee death rates from colorectal cancer have dropped by 44% and 22% respectively. Early screening and treatment are explanations for this downward trend. Since 2004, Sullivan County has met the Healthy People 2010 target of 13.9 deaths from colon cancer per 100,000.

Age-adjusted Colon Cancer Deaths per 100,000 Males 1990-2006, Sullivan County, TN



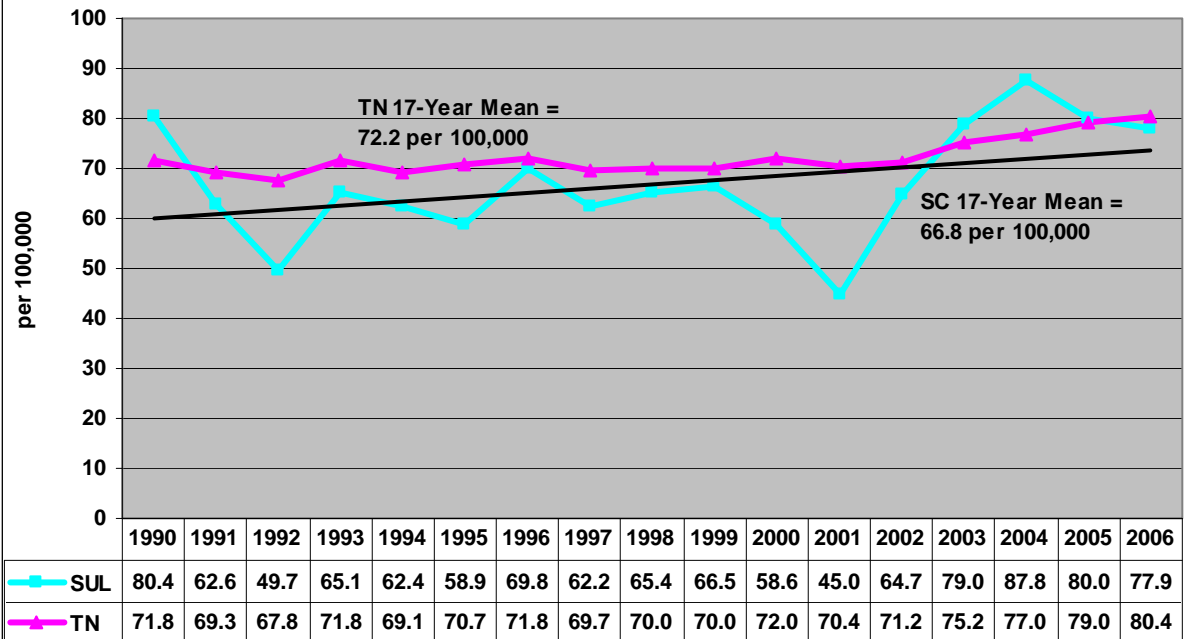
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
45-64 yrs	20.9	11.8	22.9	16.8	16.6	35.1	26.4	15.5	27.8	5.0	27.1	29.1	21.5	28.3	16.3	23.0	11.3
65-74 yrs	79.3	86.5	85.0	114.2	53.0	44.9	59.9	158.1	90.8	68.1	90.4	90.0	52.5	82.2	59.8	66.6	72.3
75+ yrs	163.7	291.5	104.9	169.0	251.3	168.1	121.4	166.5	199.7	193.9	162.9	177.4	148.1	188.5	143.7	131.7	122.2

Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Age is clearly a risk factor for colon cancer as shown in the trend lines for the 3 age-groups: 45-64, 65-74 and 75+ years. The 17-year mean rate for 45-64 year-olds is 20.9 per 100,000, 79.6 per 100,000 for the 65-74 age-group and twice that (170.9 per 100,000) for the 75 and older. Colon cancer has dropped over this time period for each age-group; the greatest drop of 43.1% among those 45-64 years old. The 17-year slope line is distorted due to the scale of the graph. The mean rate for the 75+ age-group dropped by 25.3% and 8.8% for the 65-74 year olds.

All Injuries Death Rates per 100,000 Sullivan Co + Tennessee, 1990- 2006

Age-Adjusted Rates Standardized to the US 1MM Standard Population

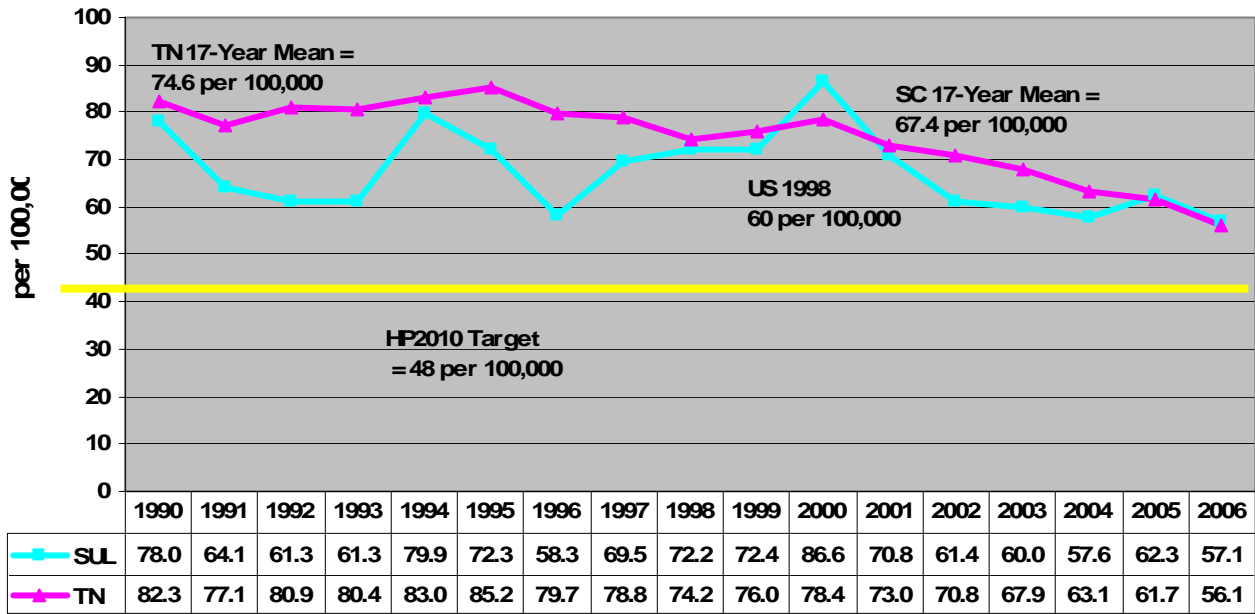


Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

All Injuries is a broad label that categorizes the damage to human health on the behavior and event that preceded the injury. Two broad categories are 1) unintentional injuries or accidents which are commonly referred to as outcomes of chance and 2) intentional injuries such as assault and suicide. Unintentional injuries include motor vehicle crashes, nontransport accidents, child and elderly falls, and many workplace accidents. Between the years 1990 and 2006, All Injuries, as a category, appears to be following an increasing trend in both Sullivan County and TN and on average, there are slightly more injuries in Sullivan County than Tennessee. It is believed that this health outcome category will one day rival infectious disease.

Motor vehicle crashes, which falls under unintentional injuries is the leading cause of death for those 15-44 years old; trends and comments were provided earlier on page 16.

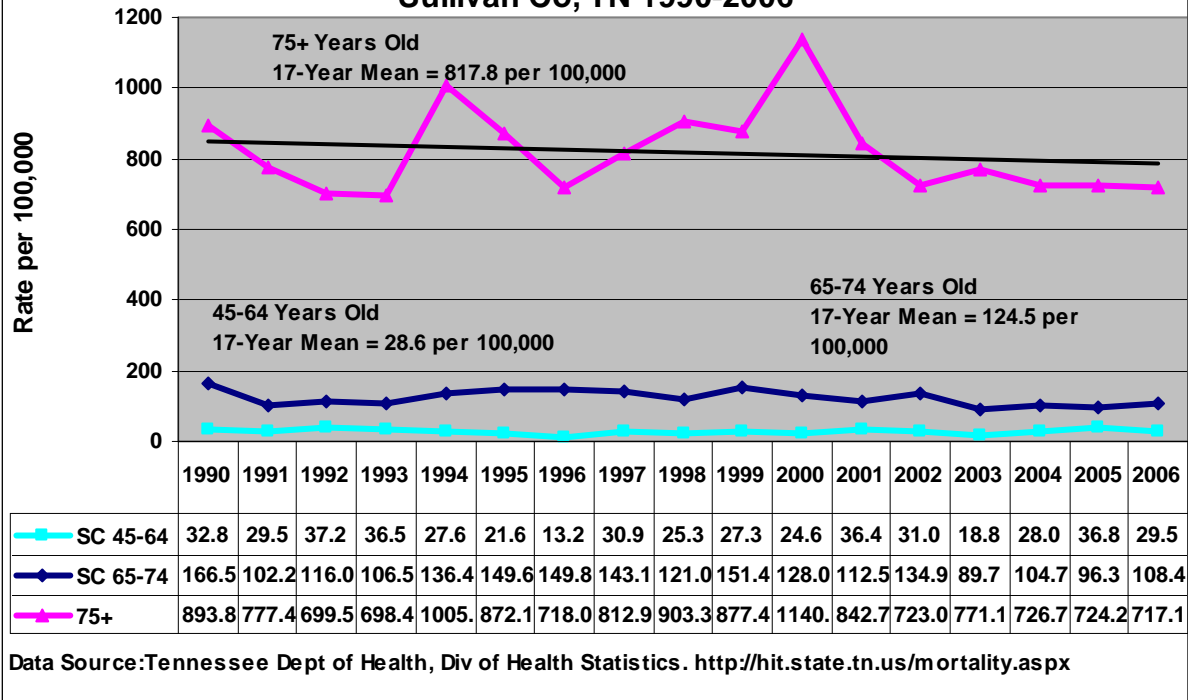
Age-Standardized Stroke Death Rates per 100,000 1990-2006 Sullivan County and TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Stroke is the third leading cause of death in the United States and the 4th leading cause in Sullivan County. Stroke is also a major cause of adult disability. A large proportion of strokes is preventable and many of the lifestyle factors associated with heart disease, diabetes and cancer also are associated with having a stroke. Rates of death from stroke have been dropping consistently since 1990; in 1990 there were 78.0 stroke deaths per 100,000 and in 2006, there were 57.1 per 100,000 – 26.8%. A similar drop occurred across the state and in 2006, the rate of death from stroke across the state paralleled Sullivan County’s. Increased education as to the signs and symptoms of a stroke “brain attack” improved medical response are largely explains this favorable trend. In 2006, Sullivan County remains 19% above the Healthy People 2010 target of 48 per 100,000.

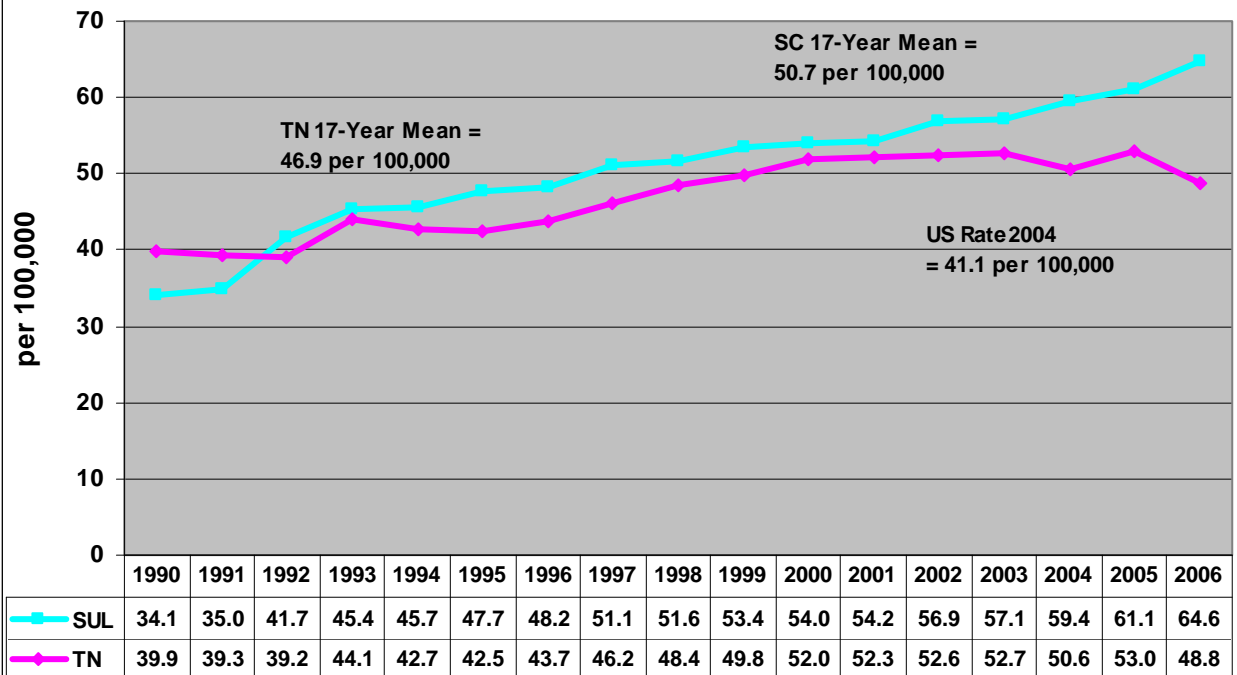
Age-Specific Stroke Death Rates per 100,000
Ages 45-64, 65-74 and 75+ Years
Sullivan Co, TN 1990-2006



Death rates from stroke in 45-64 year olds did not change significantly between 1990 and 2006. Rates dropped among seniors: the 64-75 age-group 34.9% and 19.8% among 75+ year olds. Early detection and treatment has help these older groups manage the disease and live longer.

Having a stroke can occur at any age but risk certainly increases with increasing age as evidenced by the trend lines. There has been some improvement in the incidence of stroke death for each of the 65-74 year-olds but the real gain is observed in 75+ year olds: in 1990 the rate of death was 893.8 per 100,000 versus 717.1 per 100,000 in 2006 – a 19.8% decline. Stroke death rates for 45-64 year olds are about 1/8th that of 75+ year olds. There was also a death rate decline of 34.9% for 45-64 year olds over the 17-year period. No appreciable improvement in the prevention of stroke death is apparent in the 45-64 year-olds which highlights an opportunity for education, lifestyle modification, and preventive therapy for those with increased risk factors.

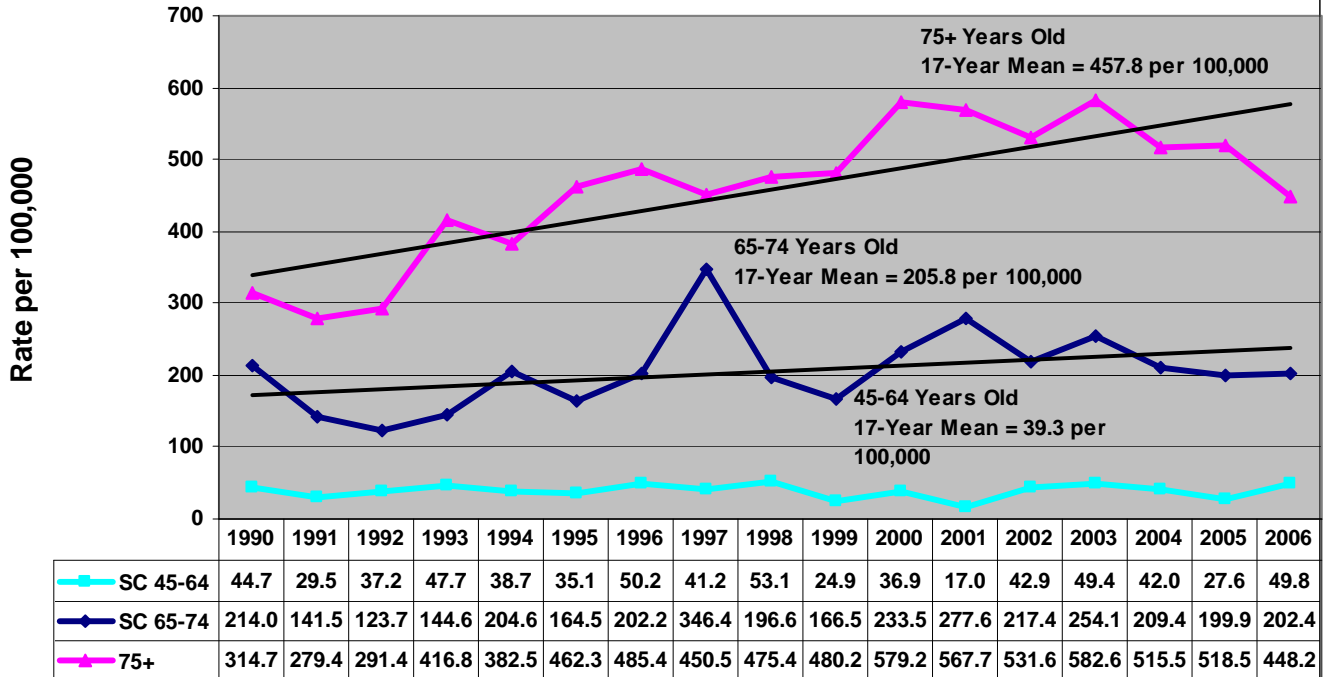
Age-Adjusted Chronic Lower Respiratory Disease Death Rates per 100,000 1990-2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Chronic or on-going lower respiratory disease is a group of diseases that affect the lower respiratory tract. Diseases in this group include chronic obstructive pulmonary disease which includes asthma, emphysema, and chronic bronchitis although there are no asthma deaths included in the above rates. Apart from asthma, cigarette smoking causes at least 80% of this group of diseases and a large portion of these deaths are preventable. In 2004, chronic lower respiratory disease was ranked as the 5th leading cause of death in Sullivan County while it was ranked 4th nationally. Since 1990, deaths have been rising steadily both in the county and the state. In 1990, the Sullivan County death rate was 34.1 per 100,000 while in 2006, there were 64.6 per 100,000. This is almost a 2-fold increase. The trend for Tennessee is similar but the rates in Sullivan County are higher. In 2006, Sullivan County’s rate was 32.3% higher than TN. This worsening difference began in 2001 and may be a reflection of the high prevalence of smoking in Sullivan County over many years. Many with this disease go undiagnosed and it may be that those who eventually receive a diagnosis and treatment do so at a point when the disease is far advanced.

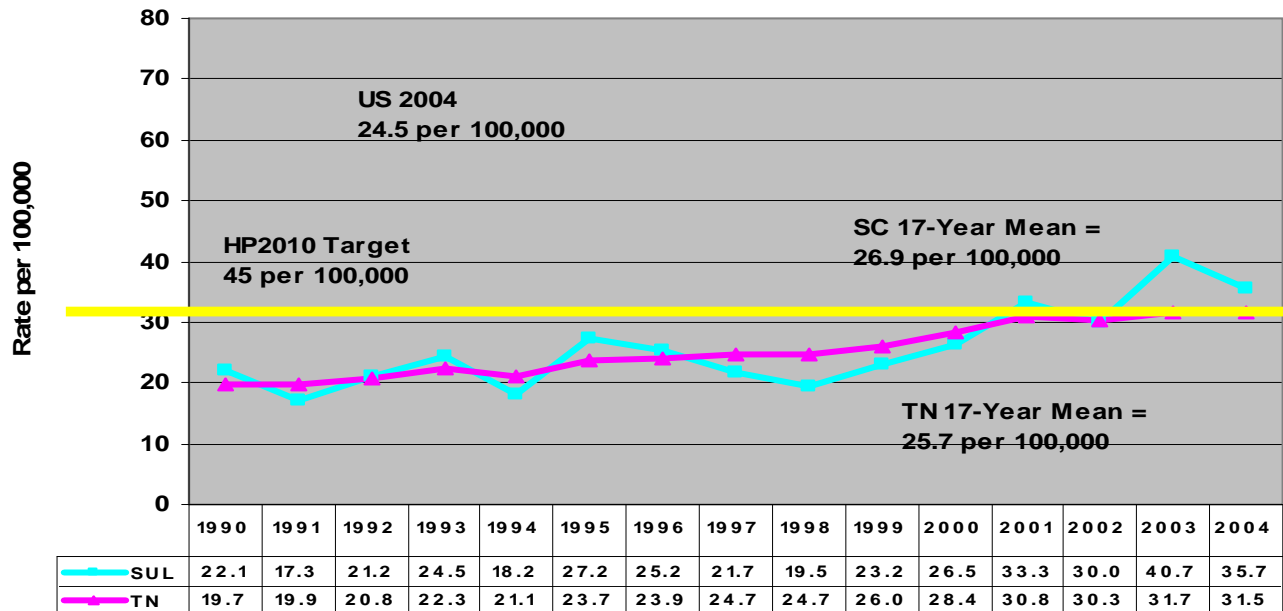
Age-Specific Chronic Lower Respiratory Death Rates per 100,000
Ages 45-64, 65-74 and 75+ Years
Sullivan Co, TN 1990-2006



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Sullivan County residents between 65-74 and 75+ year olds died at rates 5 and 11 times the rate of death for 45-64 year-olds. These exponential increases in death rates tend to correspond to cumulative cigarette smoking or possible exposure to second hand smoke. Rates did not change drastically for the 45-64 year old groups, but for 75+ year-olds, deaths increased by 42.4% between 1990 and 2006.

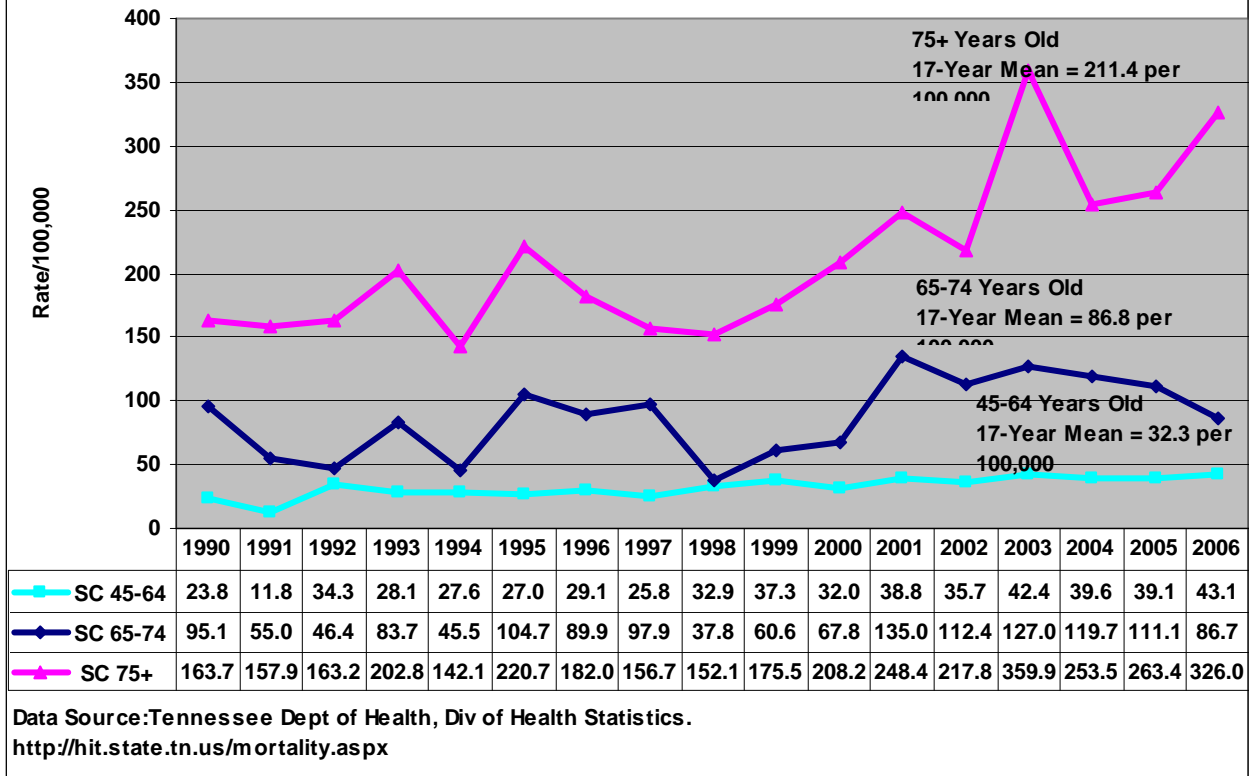
Age-Standardized Diabetes Death Rates per 100,000 1990-2006 Sullivan Co and TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Mortality from diabetes has increased steadily in both SC and TN by approximately 60% through the period from 1990 to 2004. In 2004, the rates were higher than the national average of 24.5 by 45% in SC and by 28% in TN. Although the HP2010 target rate is 45 per 100,000 population and currently both SC and TN are below that figure, with the current rate of increase, it is just a matter of time when the rates in SC will cross the HP2010 target.

**Age-Specific Diabetes Death Rates per 100,000
Ages 45-64, 65-74 and 75+Years
Sullivan Co, TN 1990-2006**

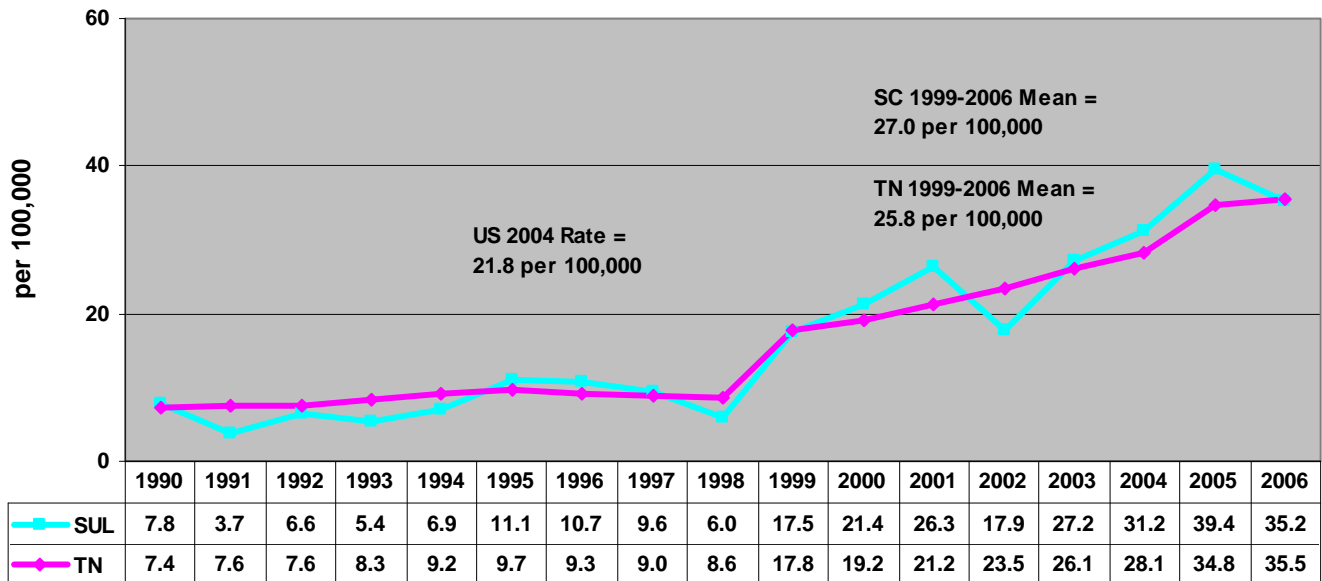


Considering the data by age groups, rates are lowest in the 45-64 years group. Still, this age group had an 81% increase in the rates from 1990 to 2006, which would account for increasing years of potential life lost.

With some fluctuations, the 65-74 years age group maintained the rates with in fact a minor reduction by 9% from 95.1 in 1990 to 86.7 in 2006.

As can be expected, the figures are worse in the 75+ age group with an increase that almost doubled in rates from 163.7 in 1990 to a rate of 326 in 2006. This, along with the 45-64 years age group, could be targeted for interventions aiming to reduce the mortality rates. Education and awareness about control of blood sugars, diet and weight management along with appropriate preventive therapy must be addressed to achieve improvement in this goal.

Age-Standardized Alzheimer's/CD Death Rates per 100,000 1990-2006 Sullivan Co and TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

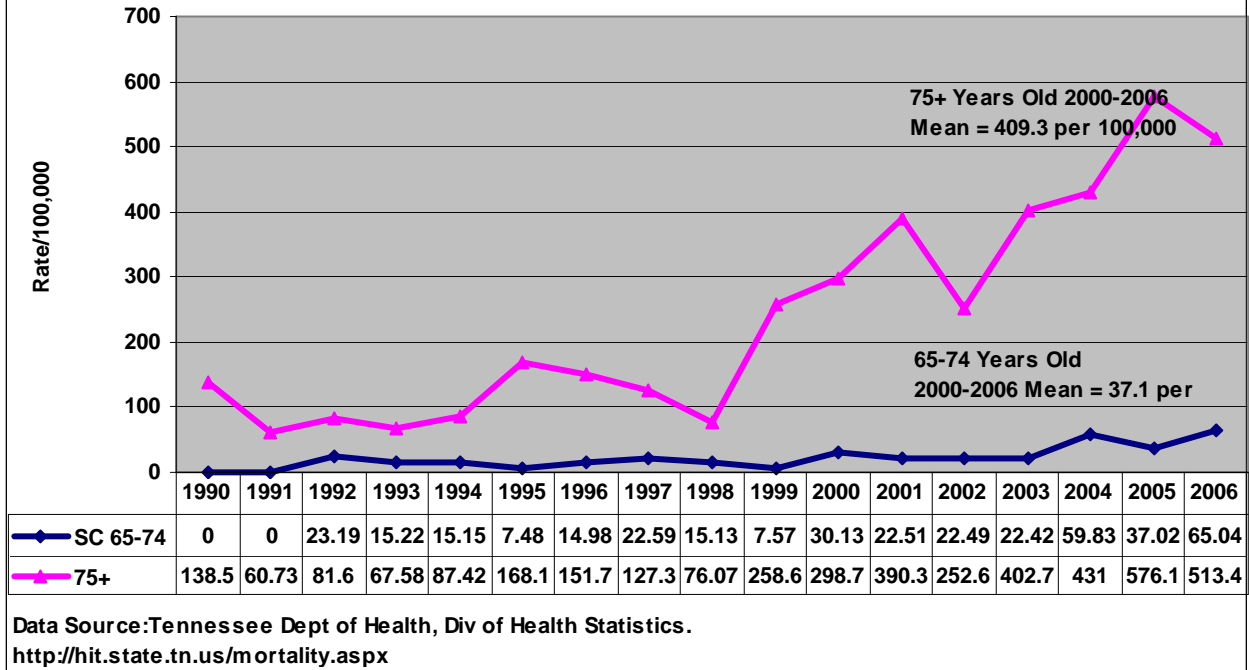
The age adjusted mortality rates for Alzheimer’s disease (AD) have risen overwhelmingly and have remained more or less parallel for both SC & TN over the 17-year period, with a sharp rise from 1998 to 1999.

In 2004, the rates were higher in SC & TN than the nation by 43% and 29% respectively.

Higher rates over the years might be observed due to increased recognition in the diagnosis of AD, resulting in more diagnosed cases, and/or a greater number of patients seeking medical care, and/or better record keeping.

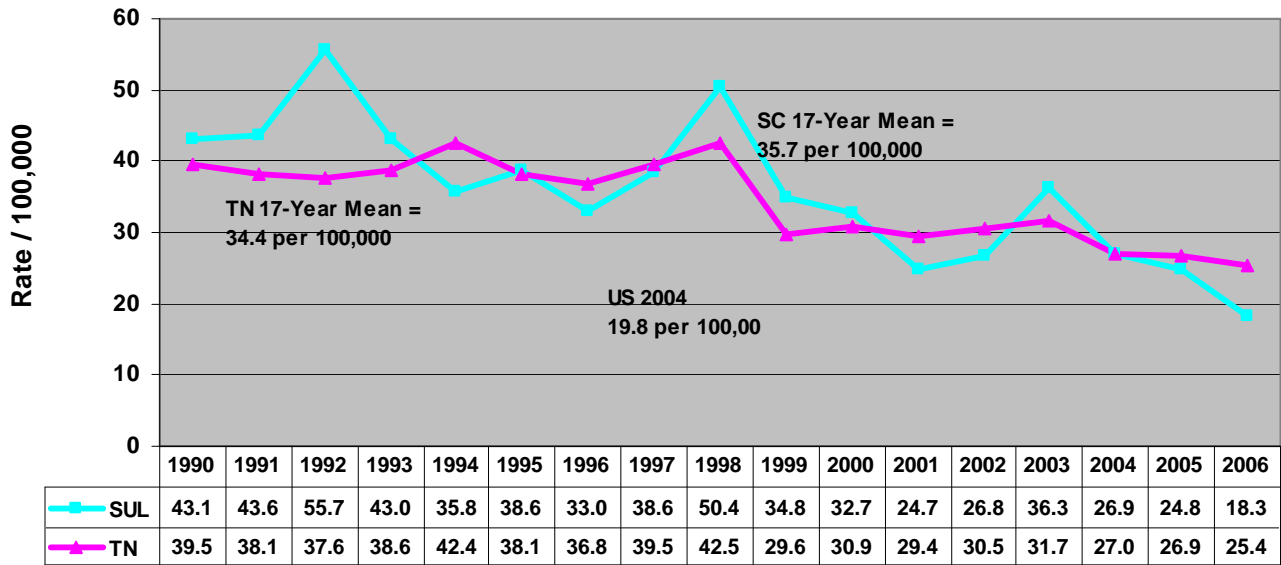
In any case, groups at risk must be identified and interventions at primary, secondary and tertiary levels of prevention must be implemented in order to reduce the incidence, prevalence, disability, and death from AD.

**Age-Specific Alzheimer's/CD Death Rates per 100,000
Ages 65-74 and 75+Years
Sullivan Co + Tennessee, 1990-2006**



This chart identifies the groups at risk of AD and is found to be those above 75 years of age. The rates in 65-74 years group has steadily increased to 65/100K, whereas those above 75 years of age, reaches a value of 513/100K in 2006, and bringing the mean value in that age group to 409/100K.

Age-Adjusted Pneumonia/Influenza Death Rates per 100,000 1990-2006 Sullivan County and TN

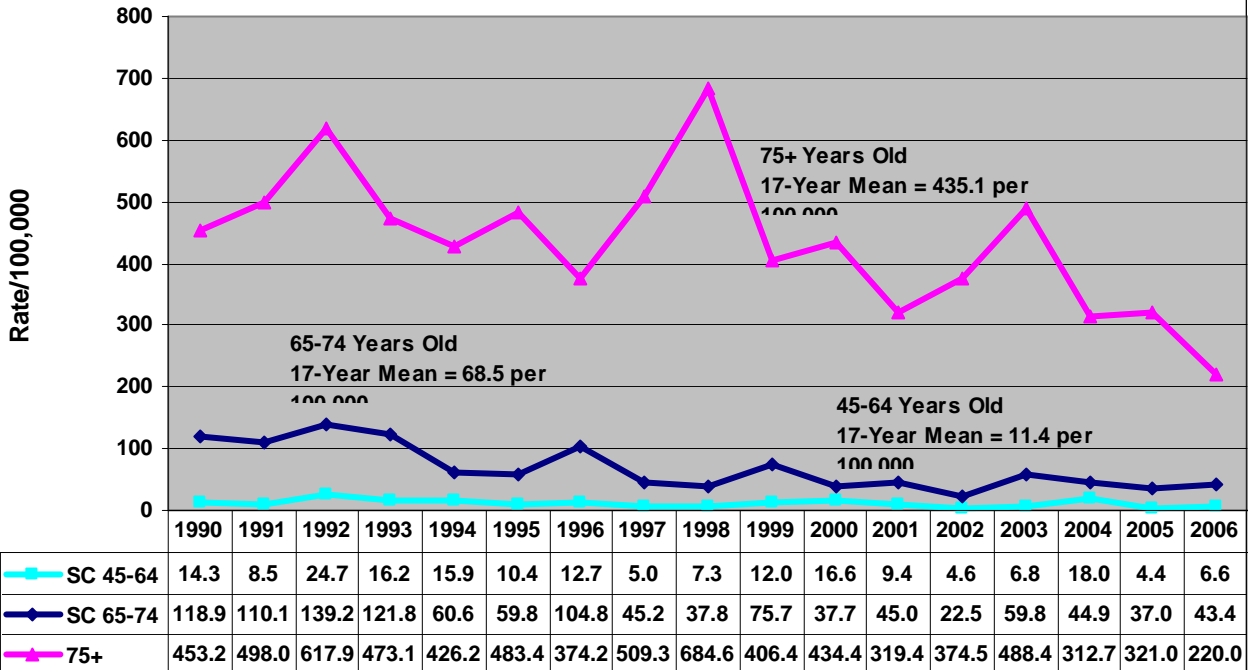


Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Over the 17-year period, death rates from pneumonia/influenza have decreased to an all time low value, both in SC and in TN to 18.3 and 25.4, representing a drop of almost 58% and 36%, respectively. Except for three peaks in 1992, 1998, & 2003, rates have steadily declined in SC. Although the mean value is quite high, the trends are favorable.

In 2004, death rates for both SC & TN (27 deaths per 100,000) were higher than the national average (19.8 deaths per 100,000) by 36%. This phenomenal rate of change can be considered to be a marker of improvement in health care services since pneumonia/influenza are the leading infectious disease causes of death worldwide.

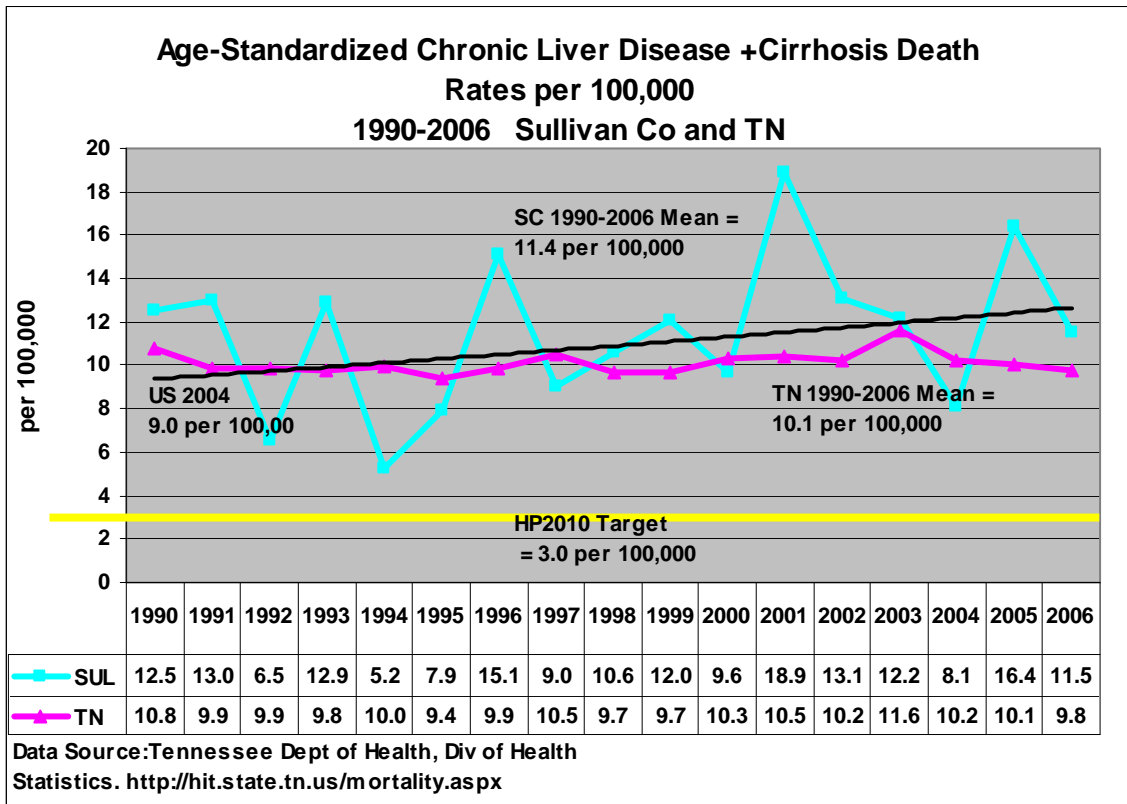
**Age-Specific Pneumonia/Influenza Death Rates per 100,000
Ages 45-64, 65-74 and 75+Years
Sullivan Co, TN 1990-2006**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

The age-specific rates reflect the overall trend of decreasing mortality from pneumonia/influenza in SC, with the age groups 45-64 yrs, 65-74 yrs, & 75+ yrs showing a reduction by 54%, 63%, & 51% respectively over the 17-year period from 1990-2006. A notable point is an all-time low mortality rate in the year 2006 in the 75+ age group, the age most susceptible for vaccine preventable and nosocomial pneumonia. Three peak values in the years 1992, 1998, & 2003 bring the mean value for 75+ age group higher at 435 per 100,000.

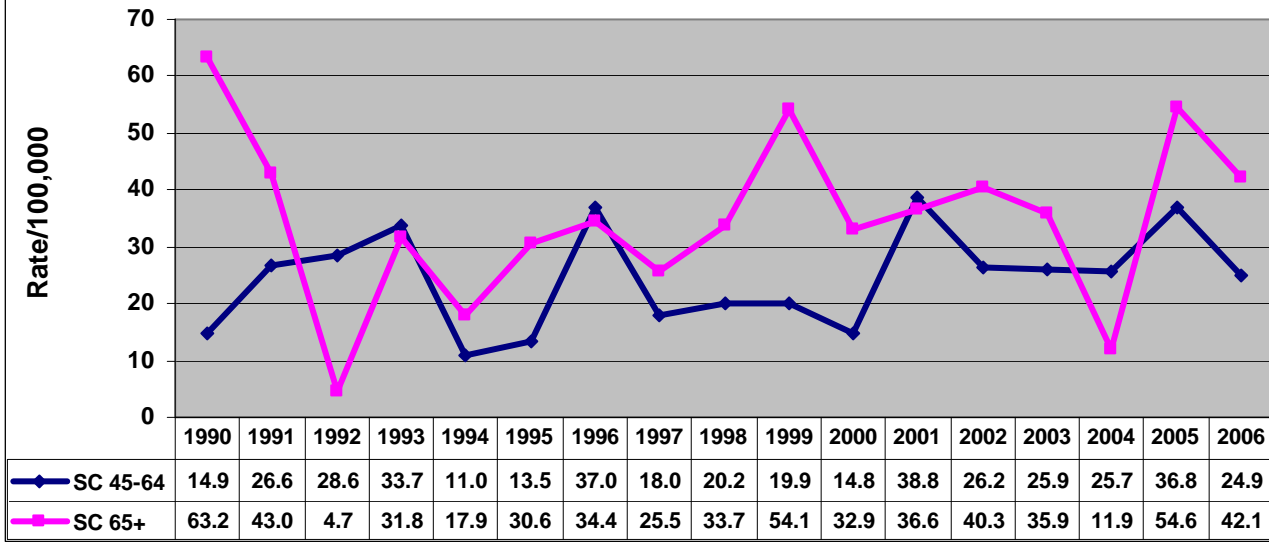
The Healthy People 2010 objective to reduce hospital admissions for immunization preventable pneumonia (in 65+ yrs age) to less than 8 per 10,000 population is the future goal.



The mortality rates from cirrhosis have fluctuated widely in SC over the 17-year period with alternating peaks and troughs, reaching a rate of 11.5 in 2006. 2006 levels are more than 300% higher than the HP2010 target of 3 per 100,000.

TN rates fare a bit better than those of SC. Comparing to the 2004 national rates of 9, SC was a little better at 8.1 and TN a little worse at 10.2. SC had its lowest rates in 1994, a value of 5.2.

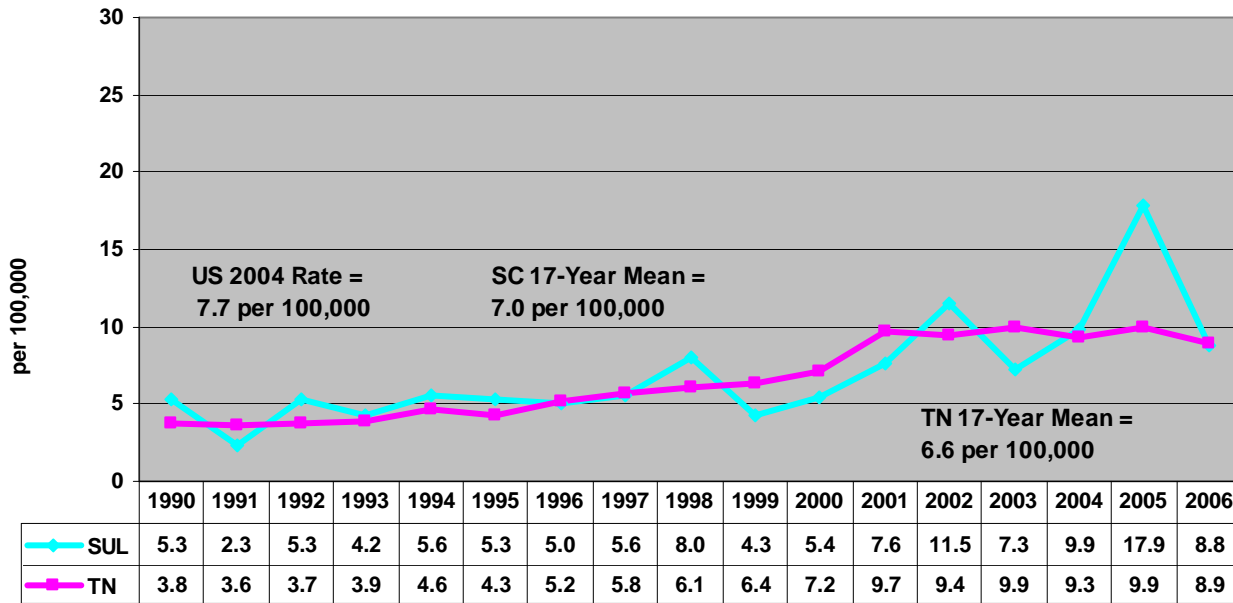
**Age Specific Chronic Liver Diseases and Cirrhosis Death Rates Per
100,000 Ages 45-64 & 65+ Years, Sullivan County, 1990-2006**



Data Source: Tennessee Dept of Health, Div of Health Statistics. <http://hit.state.tn.us/mortality.aspx>

The age-specific mortality rates for Liver disease and Cirrhosis draws a pattern that signifies the impending need for active interventions. The rates in the younger age group of 45-64 years have increased by about 67% from 14.9 per 100,000 in 1990 to 24.9 per 100,000 in 2006. While the rates have declined by 33% to a value of 42.1 per 100,000 in the age group of 65+ years, it is still a high value. This probably represents the cumulative effects of alcohol consumption on early mortality from liver disease and cirrhosis.

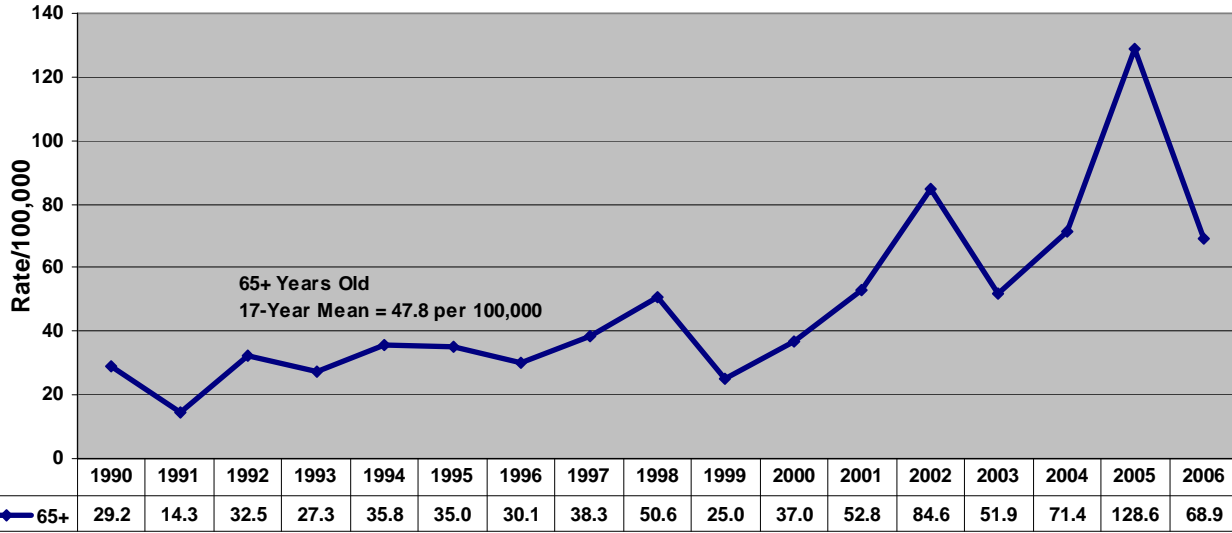
Age-Adjusted Hypertension Death Rates per 100,000 1990-2006 Sullivan Co and TN



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Death Statistical System, 1990-2004, Nashville, TN

The mortality rates from hypertension have steadily risen throughout the years to 8.8 per 100,000 in 2006, except in 2005 when it doubled from the previous year to almost 18 per 100,000. The picture is similar for TN, with a steady increase in the rates and equal to that of SC in 2006. Although the rates themselves are not big numbers when compared to other disease conditions, the percent rise over the years represent a significant increase, implying the need for continued educational prevention and intervention.

**Age-Specific Hypertension Death Rates per 100,000
Ages 65+Years
Sullivan County, TN 1990-2006**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
<http://hit.state.tn.us/mortality.aspx>

Stratifying the rate by age group most susceptible to mortality from hypertension shows an increase of about 136% from 29 in 1990 to 69 in 2006, with a profound peak in 2005 at the rate of 128.6 per 100,000. Considering the high prevalence of hypertension in this age-group, this calls for an increased awareness about the seriousness of the disease and the need for proper blood pressure control, blood lipids, diet, and other reversible risk factors.

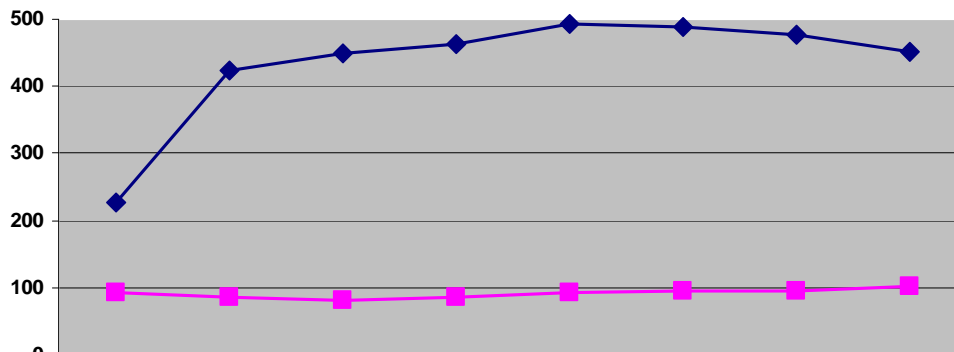
HOSPITALIZATIONS

Hospital Discharge Data

Death rates essentially describe the tip of the iceberg for the total experience of a disease. In the middle of the iceberg is the group of individuals who is affected by the disease to a point where they seek medical attention. Clinical visits and hospitalizations describe this segment of the diseased population. At the base of the iceberg is the majority of cases of a disease where people who have a condition, do not yet know that they have it.

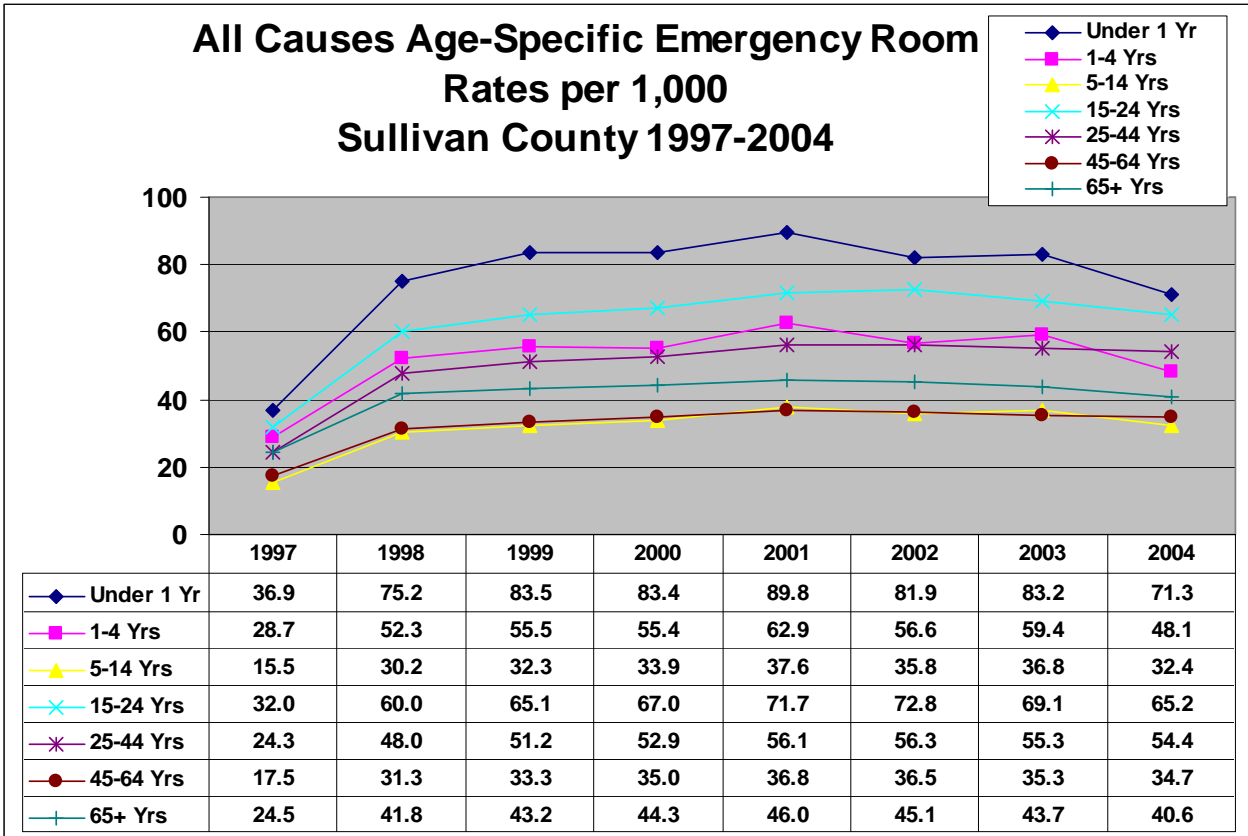
There are two types of hospital data: outpatient and inpatient data. Hospital data can be organized in 3 ways: annual patients, unique patients and total visits. The first represents the number of individuals who visited the Emergency Room or had a hospital stay at least once in a year and it most closely approximates a prevalence measure. Unique visits approximates the incidence of a disease as each person is counted once for all years of data. Total visits counts all visits each patient contributes so that an individual can be counted multiple times. This measure approximates the burden of care for a disease. For the Health Assessment, rates and trends of annual patients were described.

**Crude All Cause Emergency Room + InPatient
Hospitalization Rates per 1,000 Sullivan Co
1997-2007**



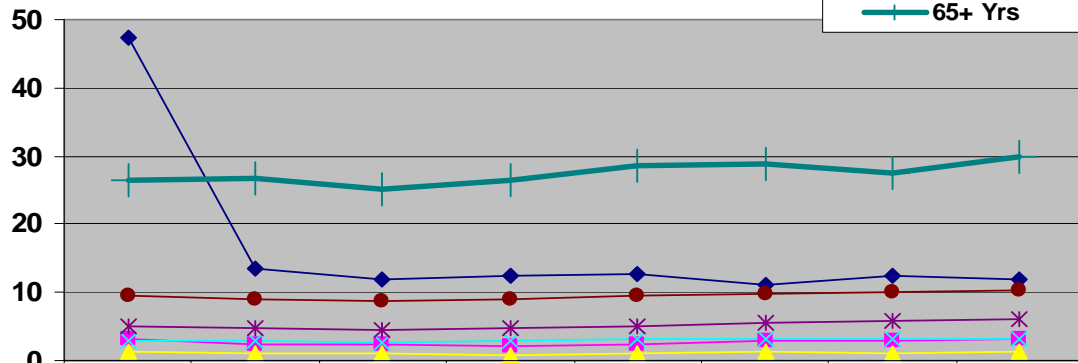
	1997	1998	1999	2000	2001	2002	2003	2004
EmergRm	227.5	423.9	450.1	464.1	494.1	487.4	477.1	451.2
InPatient	91.7	85.7	81.3	85.6	92.5	95.6	95.7	102.1

On average four out of every ten people visit the emergency room one time in any given year. Nine out of every one hundred are hospitalized for a longer stay. People visit the emergency room five times more often than they are hospitalized. Within the eight year period, visits to the ER rose at an average annual rate of 15.4% per year. In-patient hospitalizations rose by 2%.



The graph above lists ER visits for SC residents in the seven age groups. The rate of visits to the ER has risen for each age group over the last eight years. The highest rates were in the youngest members of society, those under one year. They were followed by age groups 1-4 and 25-44. The largest increase was the 25-44 year olds. Even though babies visit the ER at a rate that is almost double all the other age groups combined, the actual frequency or count of visits seems to double the 25-44 year olds group.

All Causes Age-Specific InPatient Hospitalization Rates per 1,000 Sullivan County 1997-2004



	1997	1998	1999	2000	2001	2002	2003	2004
◆ Under 1 Yr	47.4	13.6	11.8	12.3	12.7	11.2	12.5	11.9
■ 1-4 Yrs	3.3	2.3	2.5	2.0	2.3	2.8	3.0	3.0
▲ 5-14 Yrs	1.3	1.1	1.0	0.8	1.0	1.2	1.1	1.2
× 15-24 Yrs	3.0	2.8	2.5	2.8	3.3	3.1	3.1	3.1
* 25-44 Yrs	5.0	4.8	4.4	4.8	5.0	5.6	5.7	6.2
● 45-64 Yrs	9.6	8.9	8.6	8.9	9.5	9.7	10.1	10.4
+ 65+ Yrs	26.5	26.8	25.2	26.5	28.5	28.8	27.5	29.8

This graph shows the trend of In-patient hospitalizations by age group. The frequency of inpatient hospitalizations ranges from 185-520 visits for those under 1 year up to 15-24 years old. The number of annual visits rose drastically to 2,215 visits for 25-44 year olds and continues to climb. The age group 65 + had a mean number of hospitalizations of 6,707 over the eight year period. This age group also had the highest rate of 22.4 per 1,000. The largest change, apart from the 1 year and under between 1997 and 1998, in inpatient hospitalizations was among the 25-44 year olds (4%).

Top Causes Outpatient Hospitalization 2004

- All Injuries
- Acute Upper Resp. Infection
- Other Urinary
- Chronic Lower Respiratory Disease
- Teeth/Mouth
- Mental/Behavioral Disorders
- Non Infectious Colitis/Enteritis
- Chronic Rhinitis + Sinusitis
- Heart
- Ulcer/Gastritis

The category of All Injuries tops the list of causes of outpatient hospitalizations. The “All Injury” category ranked as the 3rd leading cause of death. Mental and Behavioral disorders are also in the top 10.

Top Causes Inpatient Hospitalization

- All Injuries
- Heart
- Mental/Behavioral Disorders
- Pneumonia
- Cancer
- Stroke
- Chronic Lower Respiratory
- Other Intestine/Peritonitis.
- Other Urinary
- Other Diseases Respiratory Systems
- Diabetes

These are the top causes of inpatient hospitalizations. All Injuries again ranked as number one, heart number two, and mental and behavioral disorders as number three. This list tends to reflect the death rankings.

Disease by Body System

- Blood + Heart 6.4%
- Cancer 2.0%
- Respiratory 16.5%
- Metabolic .5%
- Digestive 11.6%
- Injuries 50%
- Genitourinary 6.8%
- Neurological .1%

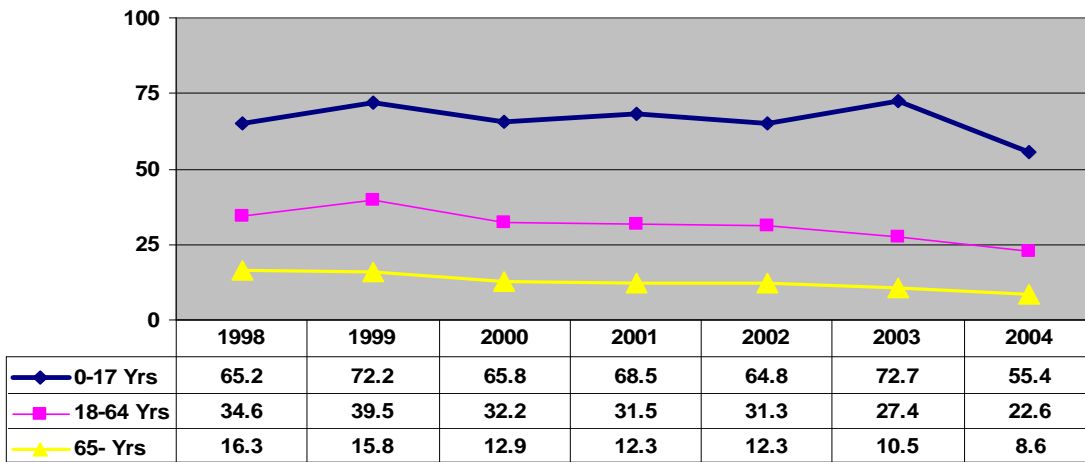
Deaths plus In and Outpatient frequencies from each disease were added into body system categories. This table shows the percentage for each category. External injuries are, by far, the most impacted category and it is followed by respiratory and digestive.

Respiratory Diseases

- Out-Patient
 - Acute Upper Respiratory Infection
 - Chronic Lower Respiratory Disease
(= Chronic Bronchitis, Asthma, COPD, Emphysema)
 - Chronic Rhinitis + Sinusitis
- In-Patient
 - Pneumonia
 - Chronic Bronchitis
 - Other Diseases of the Respiratory System

The dominant diseases that caused ER visits were shown to be Acute Upper Respiratory Infection, Chronic Lower Respiratory Disease, and Chronic Rhinitis and Sinusitis. Pneumonia, Chronic Bronchitis, and other diseases of the respiratory system precipitated inpatient hospital stays.

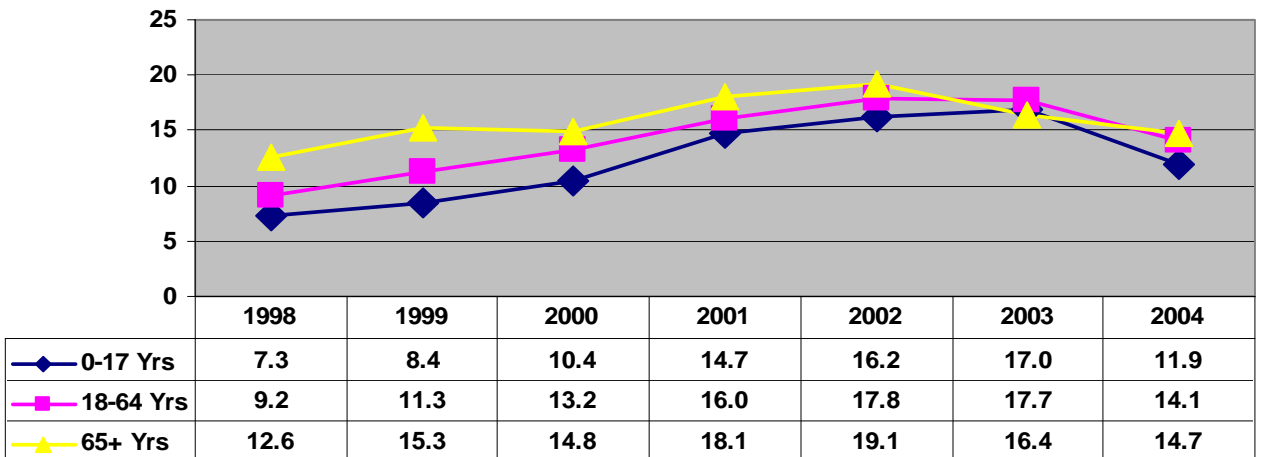
**Acute Upper Respiratory Infection
Emergency Room Visit Rate per 1,000 by 3 Age-Groups
Sullivan County 1998-2004**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Clearly, the age group 0-17 is the most likely group to visit the ER for a URI. The mean rate is 66.4 per 1,000 and this is two times the rate of the working population. Visits to the ER have dropped slightly for each age group over the 7-year period.

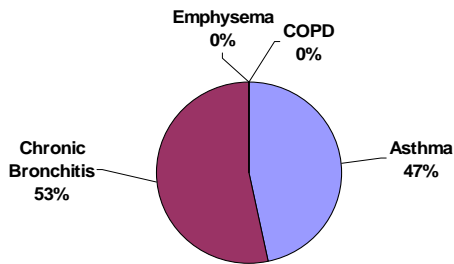
Chronic Lower Respiratory Disease Emergency Room Visit Rate per 1,000 by 3 Age-Groups Sullivan County 1998-2004



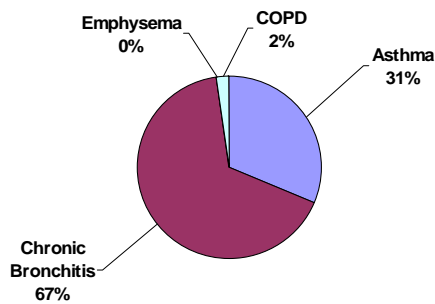
Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

The graph displays a seven-year rate for chronic lower respiratory disease for three different age groups: children and young adults, the working population, and the elderly. In 1998, the elderly were frequenting emergency rooms at a rate of 12.3 per 1,000. Over the seven years, the rates climbed in each age group but the greatest increase was in children (9.3% per year). Even though the rates are higher among the elderly, the actual number of people affected is largest in the working population.

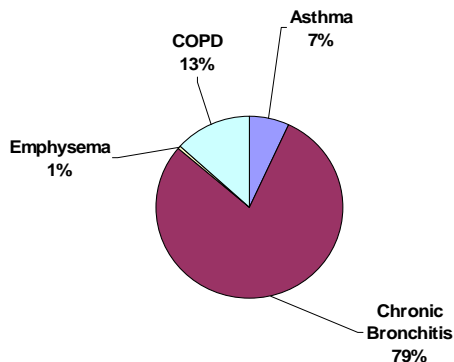
Emergency Room Visit Frequencies of the Main Group of Chronic Lower Respiratory Diseases for 0-17 Year Olds Sullivan County 2004



Emergency Room Visit Frequencies of the Main Group of Chronic Lower Respiratory Diseases for 18-64 Year Olds Sullivan County 2004

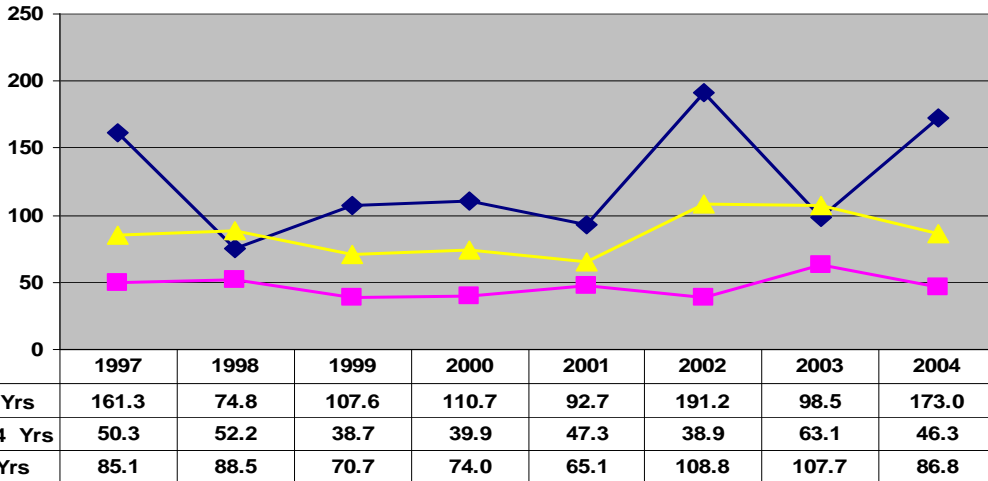


Emergency Room Visit Frequencies of the Main Group of Chronic Lower Respiratory Diseases for 65+ Year Olds Sullivan County 2004



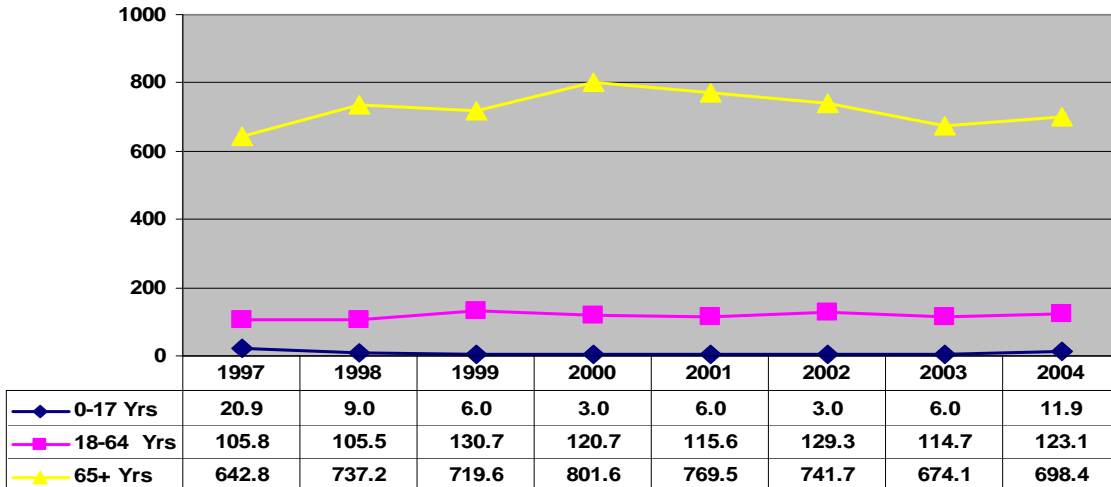
These three pie charts show the proportion of each of the diseases that comprise chronic lower respiratory syndrome. Children 0-17 years old are almost evenly split between chronic bronchitis and asthma. The 18-24 age group chart is similar in that the principle diseases are chronic bronchitis and asthma, only chronic bronchitis accounts for 2/3 and asthma a 1/3. Chronic bronchitis accounts for the main chronic lower respiratory disease for the elderly at 80%. Asthma and COPD contribute 13% and 7% respectively. Very few diagnoses of emphysema are made but is commonly included in COPD.

Asthma InPatient Hospitalization Rate per 100,000 by 3 Age-Groups Sullivan County 1997-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

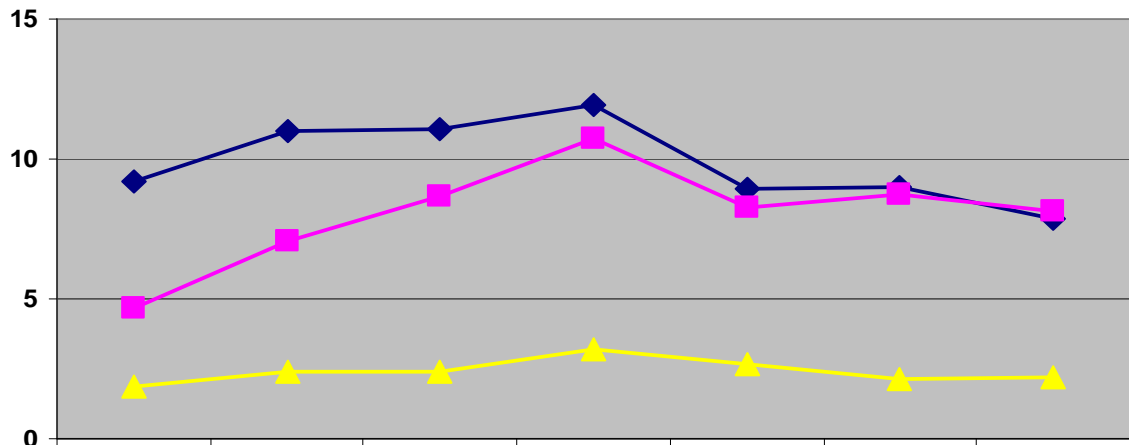
Chronic Bronchitis InPatient Hospitalization Rate per 100,000 by 3 Age-Groups Sullivan County 1997-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

The top graph shows that children are hospitalized almost three times more often than are the 18-64 year olds and 1 ½ times more often than seniors. Seniors, on the other hand, are hospitalized six times more often for chronic bronchitis than the working population.

Chronic Rhinitis and Sinusitis Emergency Room Visit Rate per 1,000 by 3 Age-Groups Sullivan County 1998-2004

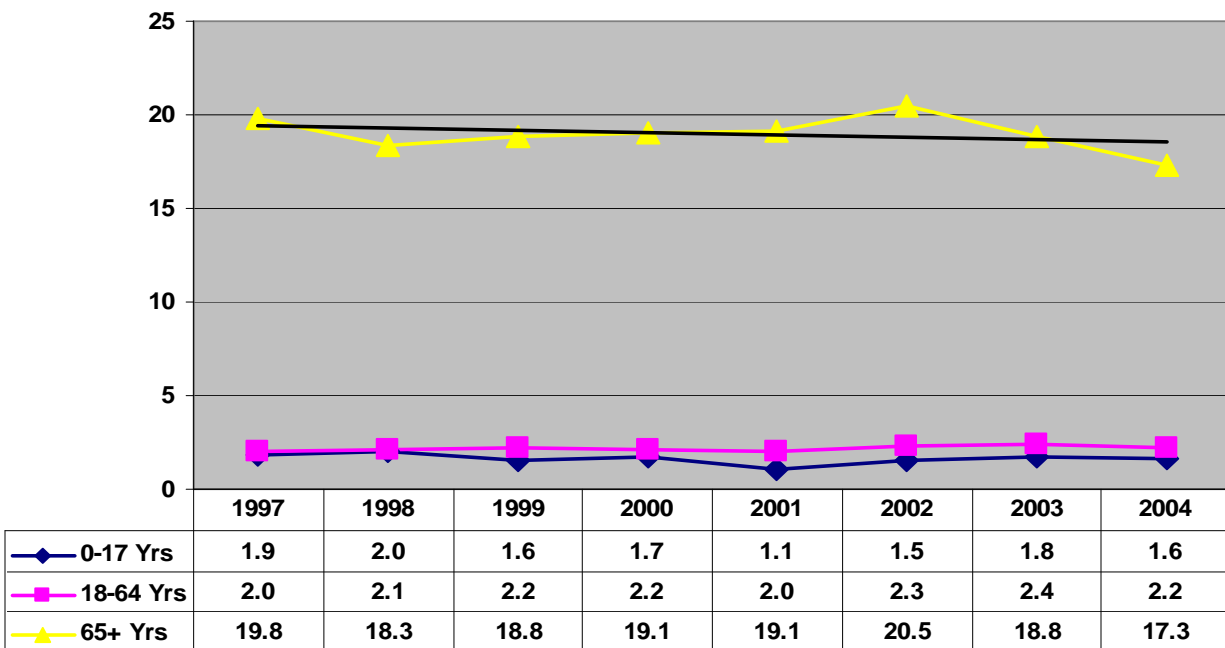


	1998	1999	2000	2001	2002	2003	2004
0-17 Yrs	9.2	11.0	11.1	12.0	8.9	9.0	7.8
18-64 Yrs	4.7	7.1	8.6	10.7	8.3	8.8	8.2
65+ Yrs	1.9	2.4	2.4	3.2	2.7	2.1	2.2

Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Chronic rhinitis and sinusitis is the third respiratory cause for ER visits. This disease is not as significant for the elderly as it is for children and the working population. Eight to ten of every 1,000 Sullivan County residents visit the ER for this respiratory disease.

Pneumonia InPatient Hospitalization Rate per 1,000 by 3 Age-Groups Sullivan County 1997-2004

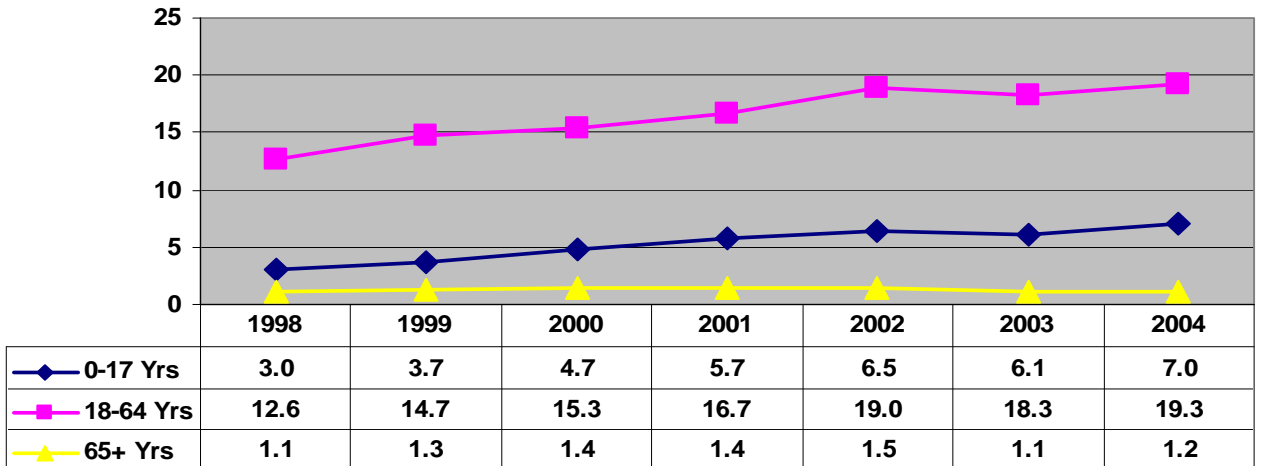


Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Rates for Pneumonia requiring inpatient hospitalization are dropping. It is interesting to note that more Tennesseans are hospitalized at a higher rate for pneumonia than are Sullivan County residents. Pneumonia is primarily a disease of those > 65. They are hospitalized, on average, ten times more often than the rest of the population. Rates did drop slightly for this age group. The scale of this graph is accommodating the high elderly rate so it appears that pneumonia is not significant for the rest of the population.

The number of 18-64 year olds who were hospitalized in 2004 was 212/1000 which is just ½ the 439 annual stays for those 65 + years old.

Teeth/Mouth Disease Emergency Room Visit Rate per 1,000 by 3 Age-Groups Sullivan County 1998-2004

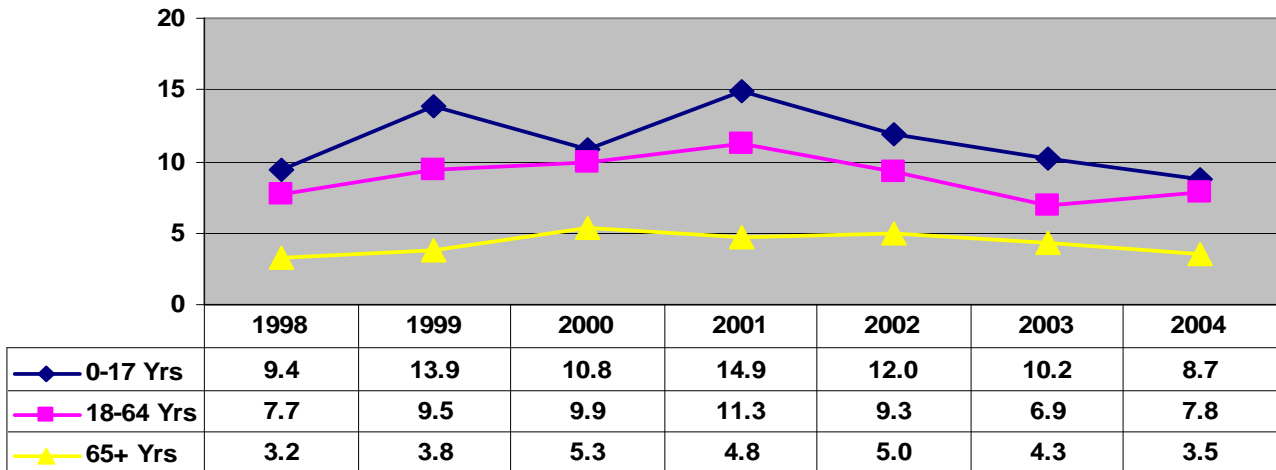


Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Teeth and mouth problems are the 5th reason people go to the ER. A survey showed that over a 6 month period, about 20 million Americans experience a toothache. Physician offices and the ER are places that people go for pain relief when they don't have adequate dental care. Low income and minority patients often have the greatest dental need. Visits to the ER have been increasing by 9% over the past seven years and that the average rate for Sullivan County was double that of TN.

This graph shows that the working population seeks dental relief in the ER about three times the rate of children. This is about 17 out of 1,000 18-64 year olds. This rate is climbing at 6.7% per year, but the rate of ER visits among children rose even more dramatically at 13.2% per year.

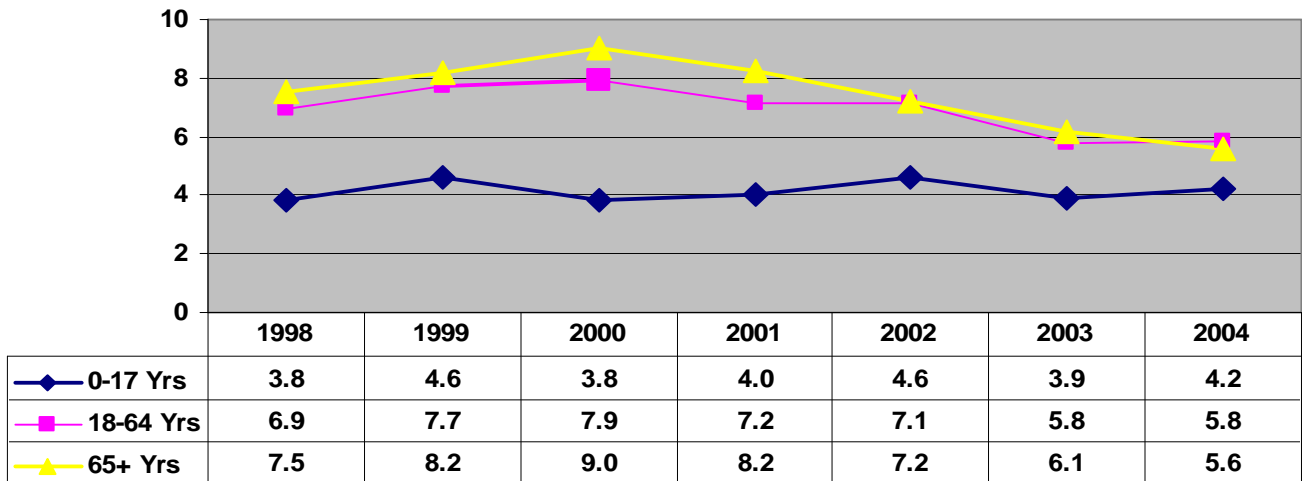
Non-Infectious Colitis/Enteritis Disease Emergency Room Visit Rate per 1,000 by 3 Age-Groups Sullivan County 1998-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

This graph shows the outpatient visits for non-infectious colitis/enteritis. This collection of diseases includes diseases such as: regional enteritis, ulcerative colitis, vascular insufficiency of the intestine, and other unspecified non-infectious gastroenteritis and colitis. It is apparent in this graph that the youngest age group and the working population are more likely to visit the ER for this collection of diseases than are the elderly. The mean rate for 0-17 year olds was 11.4 per 1,000 – that is almost one out of every ten 0-17 year olds. There has not been much net change over the seven-year period.

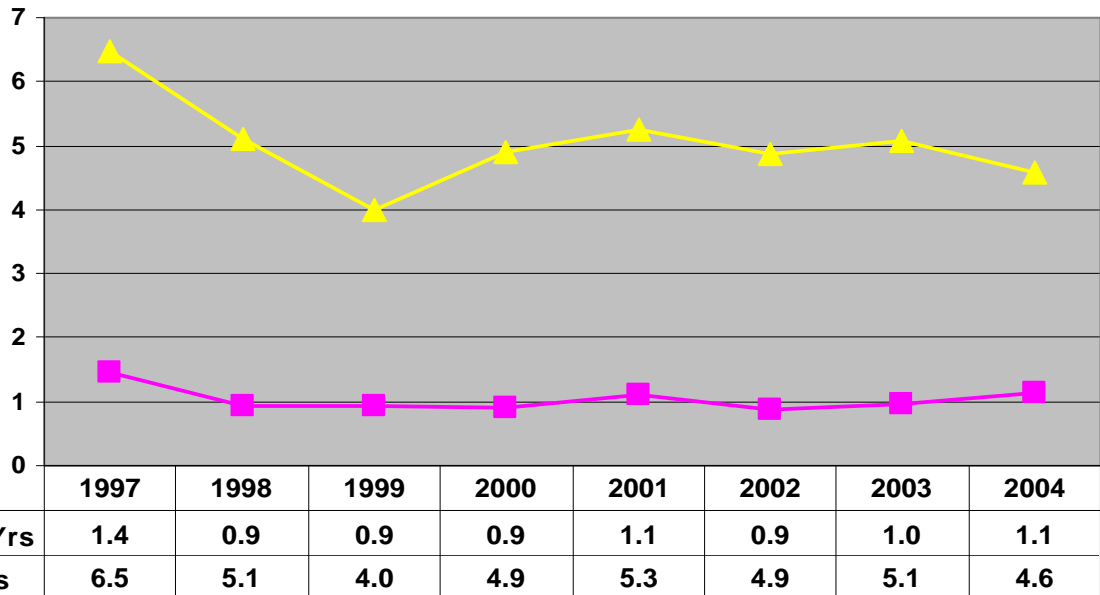
Ulcer/Gastritis Disease Emergency Room Visit Rate per 1,000 by 3 Age-Groups Sullivan County 1998-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Another group of digestive diseases seen in the ER are ulcers and gastritis. The elderly are more likely to seek medical attention than are the young. The group 18-64 year old and 65 + years have mean rates of 6.9 and 7.4 per 1,000 respectively. ER visit rates are stable for 0-17 year olds and their seven-year mean rate was 4.1 per 1,000.

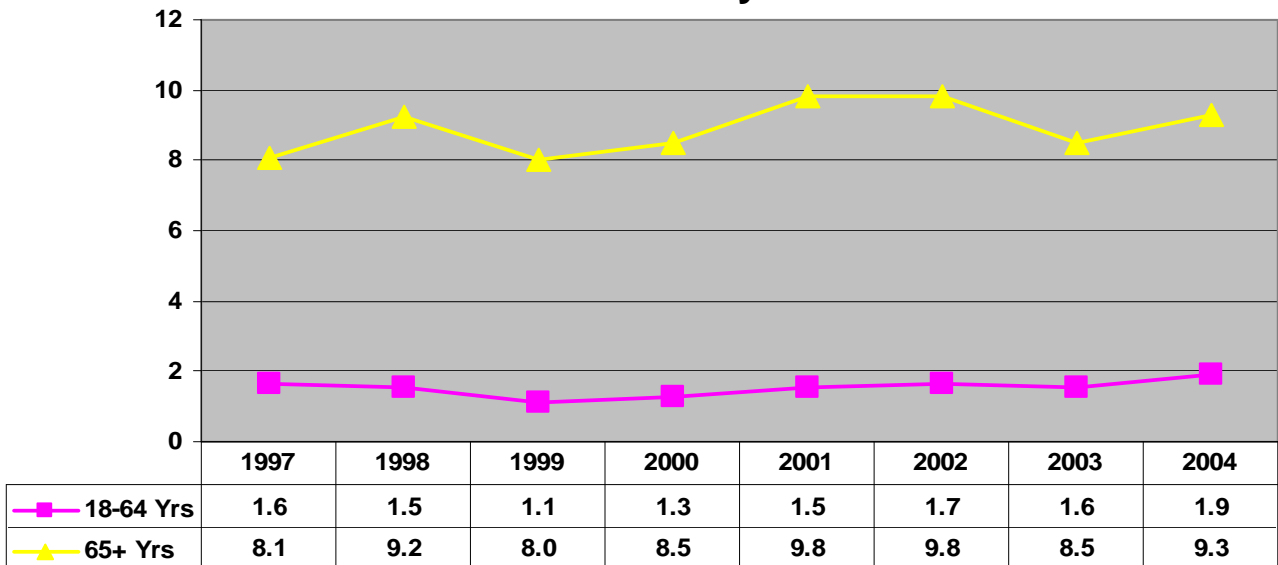
Ulcer/Gastritis InPatient Hospitalization Rate per 100,000 by 2 Age-Groups Sullivan County 1997-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

The graph displays inpatient hospitalization for ulcer/gastritis for the working population and seniors. In summary, 5 out of 1,000 65 + year olds are hospitalized as opposed to 1 out of every 1,000 of the working population. Rates appear stable at this time.

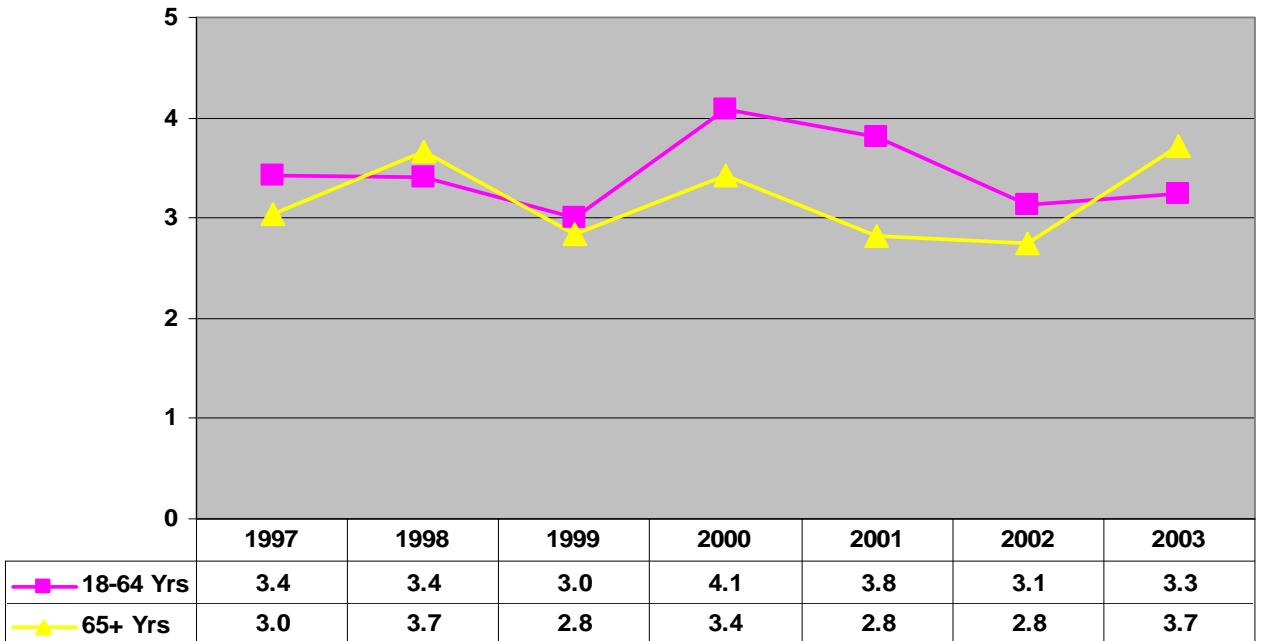
Other Intestine/Peritoneum Disease InPatient Hospitalization Rate per 1,000 by 2 Age-Groups Sullivan County 1997-2004



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Other diseases of the intestines and peritoneum include intestinal obstruction, diverticula of the intestine, functional digestive disorders, fissures, abscesses, and peritonitis. This is a disease of the those > 65 as one out of every 100 in that age group seeks medical attention in the ER for these conditions.

Gallbladder Disease InPatient Hospitalization Rate per 1,000 by 2 Age-Groups Sullivan County 1997-2004



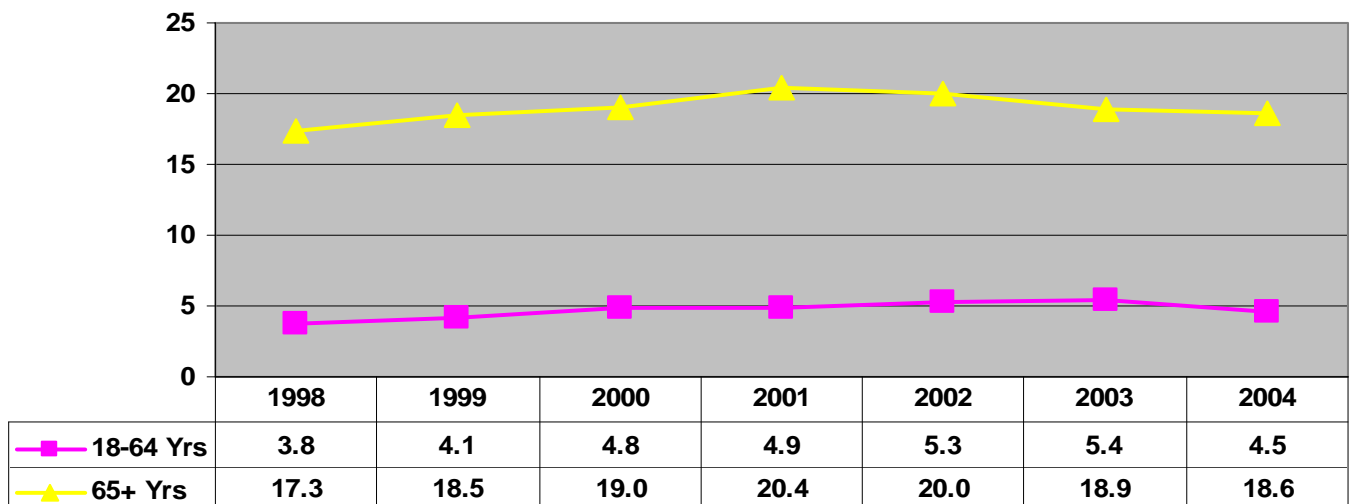
Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Gallbladder disease is a very common disorder in the United States. This group of diseases includes gallstones, biliary colic, cholecystitis, among others. Some risk factors for gallstones include: obesity, frequent fasting, rapid weight loss, lack of physical activity, diabetes, cirrhosis, and certain medications. The mean rates for 18-64 year olds and 65 + year olds are about the same: 3.0 and 3.7 per 1,000 respectively.

Circulatory System Diseases

- Out-patient
 - All Heart
 - Primary Hypertension
- In-patient
 - Heart: Ischemic + Other
 - Stroke
 - Primary Hypertension

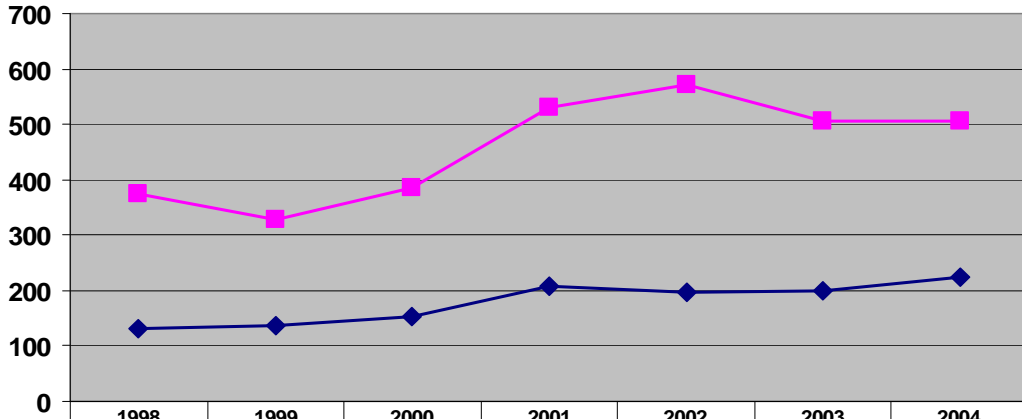
**All Heart Disease
Emergency Room Visit Rate per 1,000 by 2 Age-Groups
Sullivan County 1998-2004**



Data Source: Tennessee Dept of Health, Div of Health Statistics.
Hospital Discharge Data System, 1998-2004, Nashville, TN

Annual emergency room hospitalization was consistent for both 18-64 year-olds and 65+ years. 65+ aged residents visit the ER about 4 times more frequently than do 18-64 year-olds for heart disease conditions.

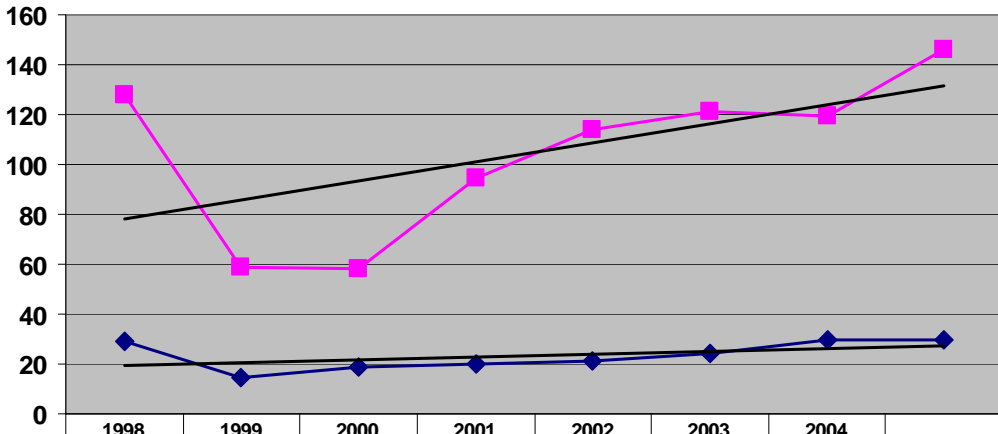
**High Blood Pressure Emergency Room Visist
Rate per 100,000 Sullivan County + TN
1998-2004**



18-64 Yrs	131.6	138.1	153.2	207.0	195.6	198.8	225.1
65+ Yrs	374.9	328.6	386.4	529.3	572.4	506.6	505.1

Visits to the ER for hypertension are between 4 and 5 times more frequent for both those aged 18-64 and 65+. Both ER and Inpatient stays rose steadily.

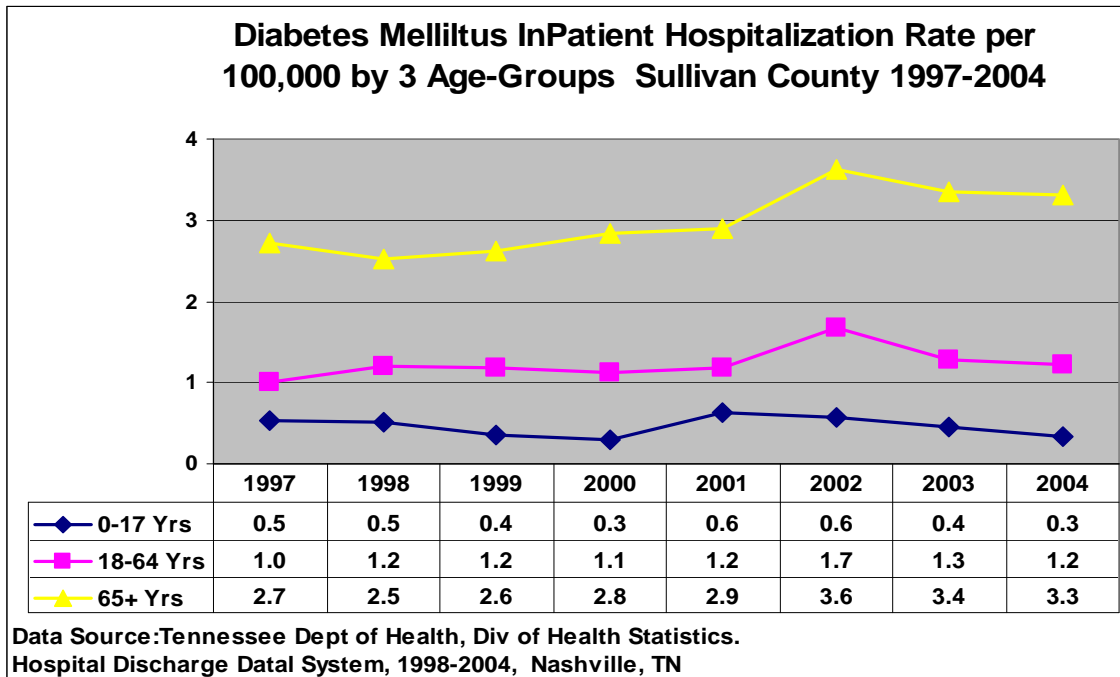
**High Blood Pressure InPatient Hospitalization
Rate per 100,000 Sullivan County + TN
1998-2004**



18-64 Yrs	29.3	14.6	18.8	19.9	21.0	24.2	29.5	29.5
65+ Yrs	127.7	59.0	58.2	94.5	114.0	120.9	119.7	146.0

Endocrine, Metabolic Diseases

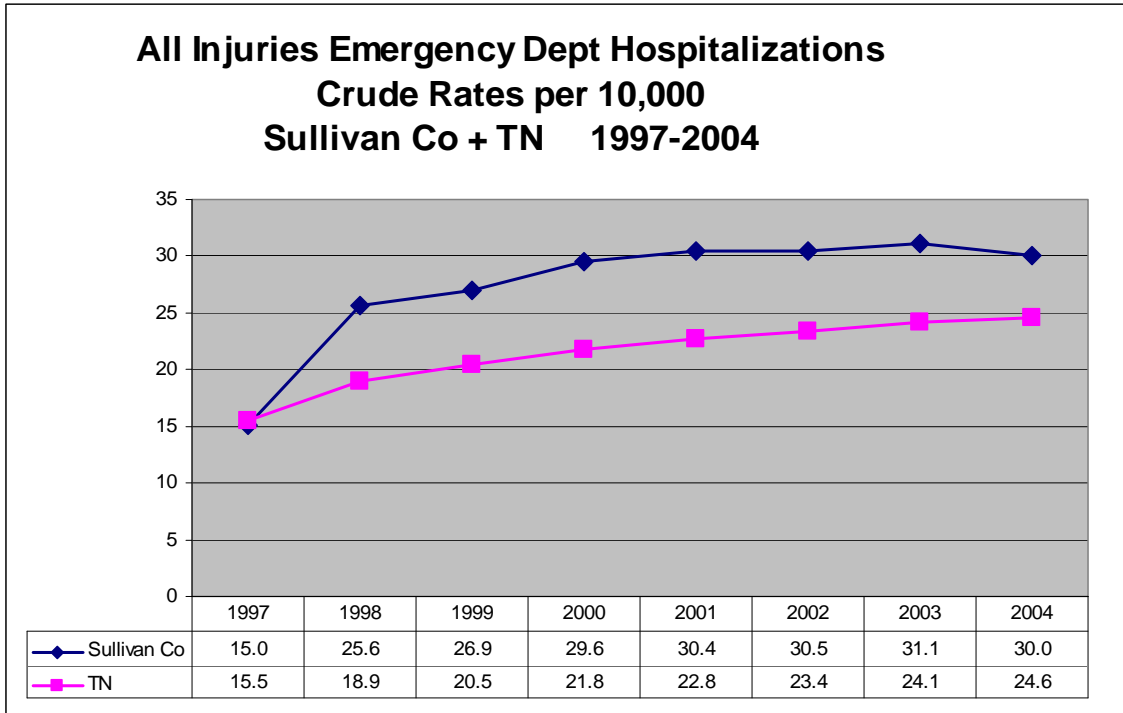
In-patient



In 2004, age 65+ residents were being hospitalized 3 times more often than were 18-64 year-olds and the rate of stay rose by 22% over the 7-year period. Rates also rose slightly for 18-64 year-olds.

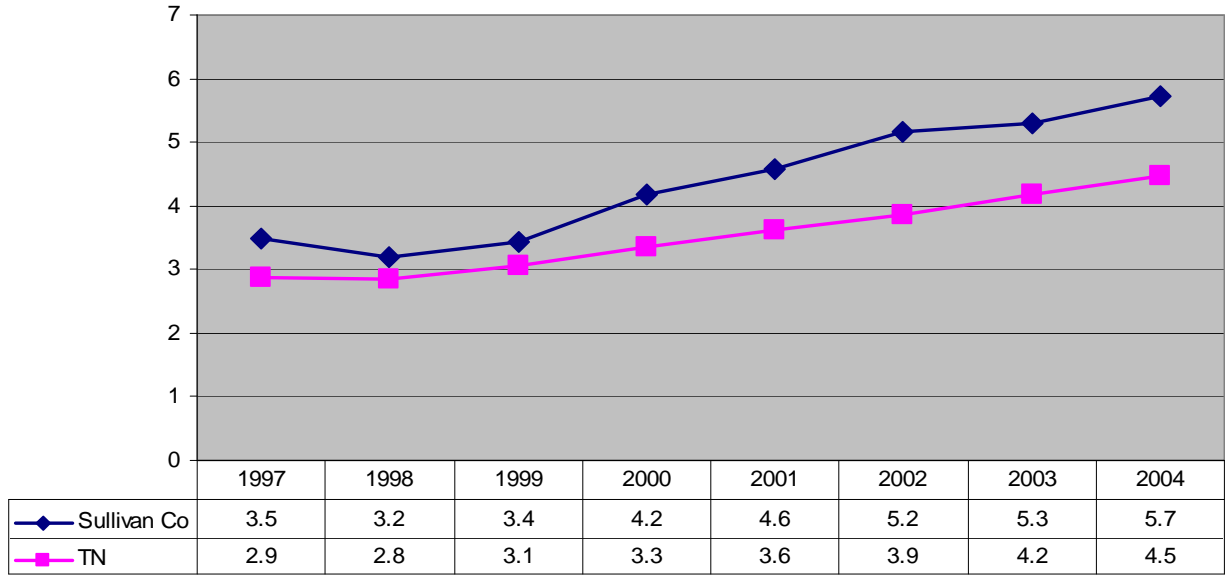
Injuries and Poisonings

- Motor Vehicle Accidents
- Other Transport
- Poisonings (drugs, solids, liquids, gases)
- Medical mishaps
- Falls
- Suicide
- Fire, Heat, Cold, Lightening, Drowning, Choking, Firearms, Explosions, Electric, Radiation, Legal, Intervention, War



All Injuries rates of ER visits for both Sullivan County and TN climbed between 1997 and 2004 and the rise was steeper in Sullivan County. The average increase per year in Sullivan County was 14.5 %. Since these are crude rates, there may be some demographic differences influencing these trends.

All Injuries InPatient Hospitalizations Crude Rates per 10,000 Sullivan Co + TN 1997-2004

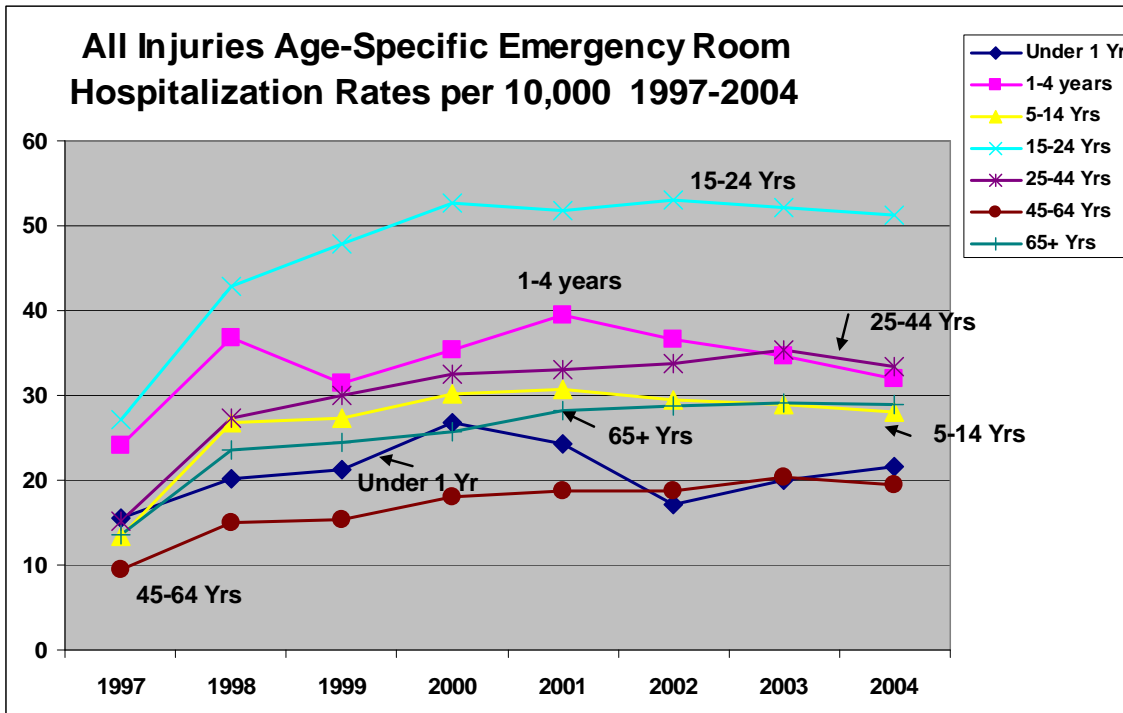


Sullivan County residents are hospitalized slightly more often for All Injuries than TN residents. Both regions saw steady increases in inpatient hospitalizations: rates rose at an average annual increase of 6.6% in SC and 6% in TN.

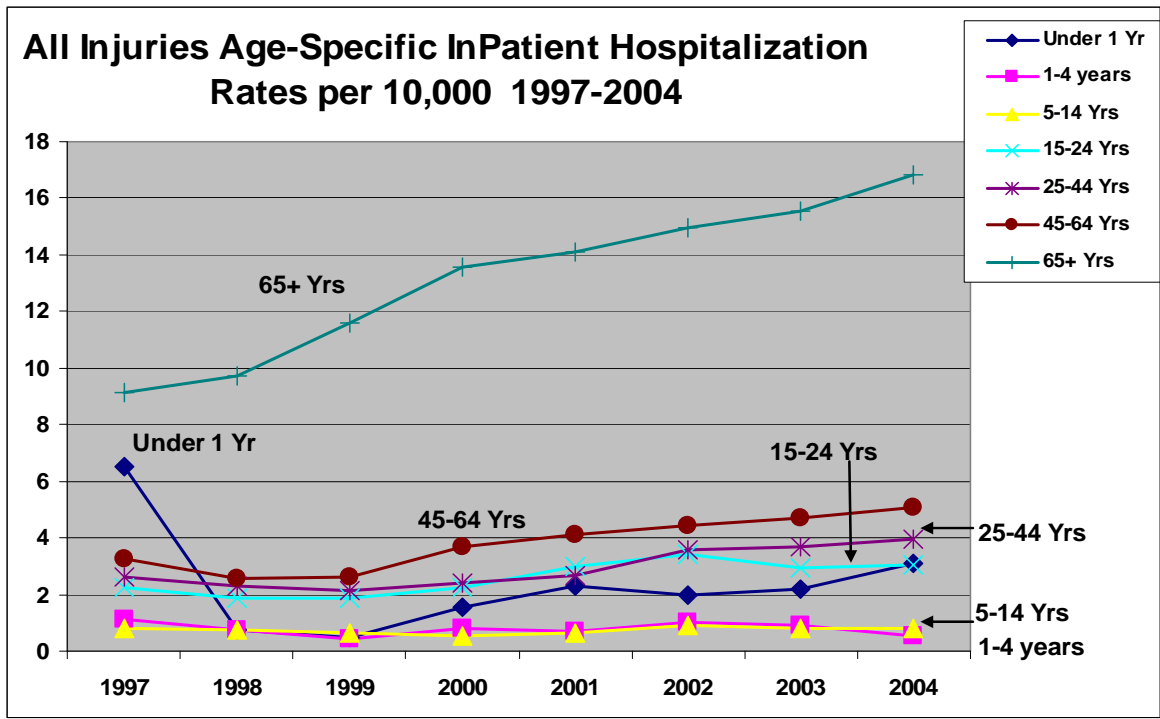
Sullivan County's Leading Injuries and Mental/Behavioral Disorders 2004

7 Age Groups

- Under 1 year (low numbers – unstable)
- 1-4 years (low number – unstable)
- 5-14 years
- 15-24 years
- 25-44 years
- 45-64 years
- 65 + years



This graph depicts the All Injuries ER rate per 10,000 by age group. The outstanding age group is 15-24 year olds. Their 7-year mean rate is 47.3 per 10,000. The next group at greatest risk is the 1-4 year olds with a rate of 33.8 per 10,000. The lowest All Injury rates were among the 45-64 year olds. All of the age-groups saw a rise in their rates over the 7 years.



In patient hospitalization identifies a different group with the highest risk for injuries: those > 65. Their mean rate was 13.2 per 10,000 and this is between 18.9 and 3.5 times the rate of the other age groups. All but the 1-4 year old age group saw a gradual rise in Inpatient hospitalization for All Injuries.

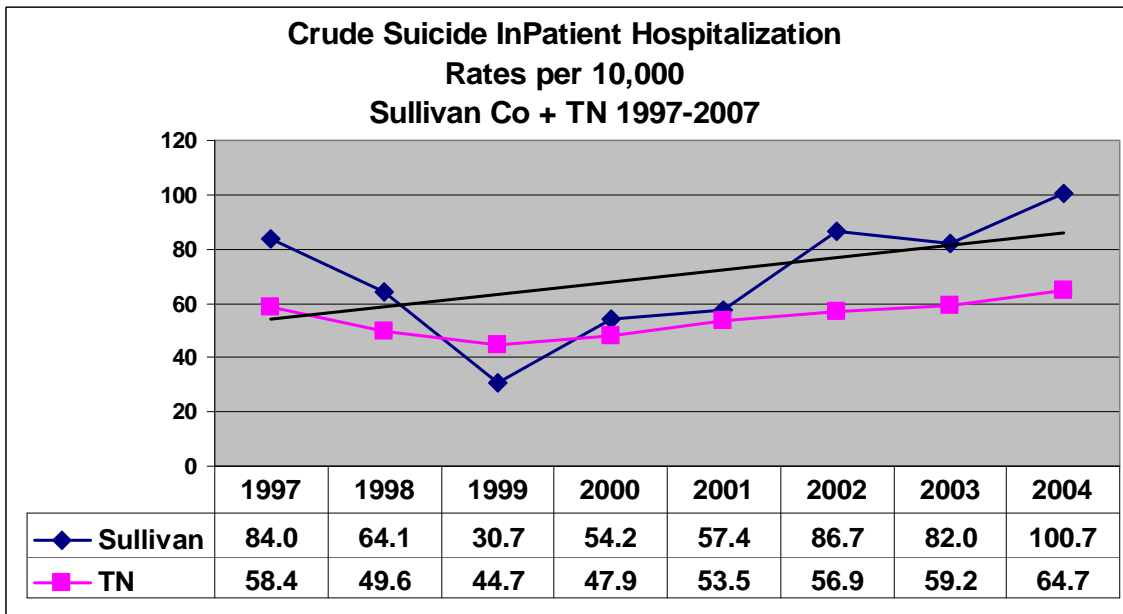
Injuries 2004 All Age Groups

Out Patient Hospitalization 2004				In Patient Hospitalization 2004			
		n	%			n	%
1	Other Accidents	9937	48.4	1	Falls	774	31.4
2	Falls	6,003	29.2	2	Medical	749	30.4
3	Motor Vehicle Accidents	2,441	11.9	3	Other Accidents	312	12.6
4	Assault	711	3.5	4	Motor Vehicle Accidents	216	8.8
5	Medical	678	3.3	5	Suicide	155	6.3
6	Other Transport	298	1.4	6	Poisoning Drugs	70	2.8
7	Suicide	184	0.9	7	Other Organic	62	2.5
8	Poisoning GV + SL	127	0.6	8	Assault	46	1.9
9	Poisoning Drugs	112	0.5	9	Choking	27	1.1
10	Firearm	32	0.2	10	Other Auto	20	0.8
11	Heat	17	0.1	11	Other Transport	15	0.6
12	Choking	8	0.0	12	Poisoning SL + GV	13	0.5
13	Drowning	2	0.0	13	Firearm	8	0.3
14	Lightening	1	0.0		Total Injuries	2,467	100
15	War	1	0.0				
	Total Injuries	20,552	100				

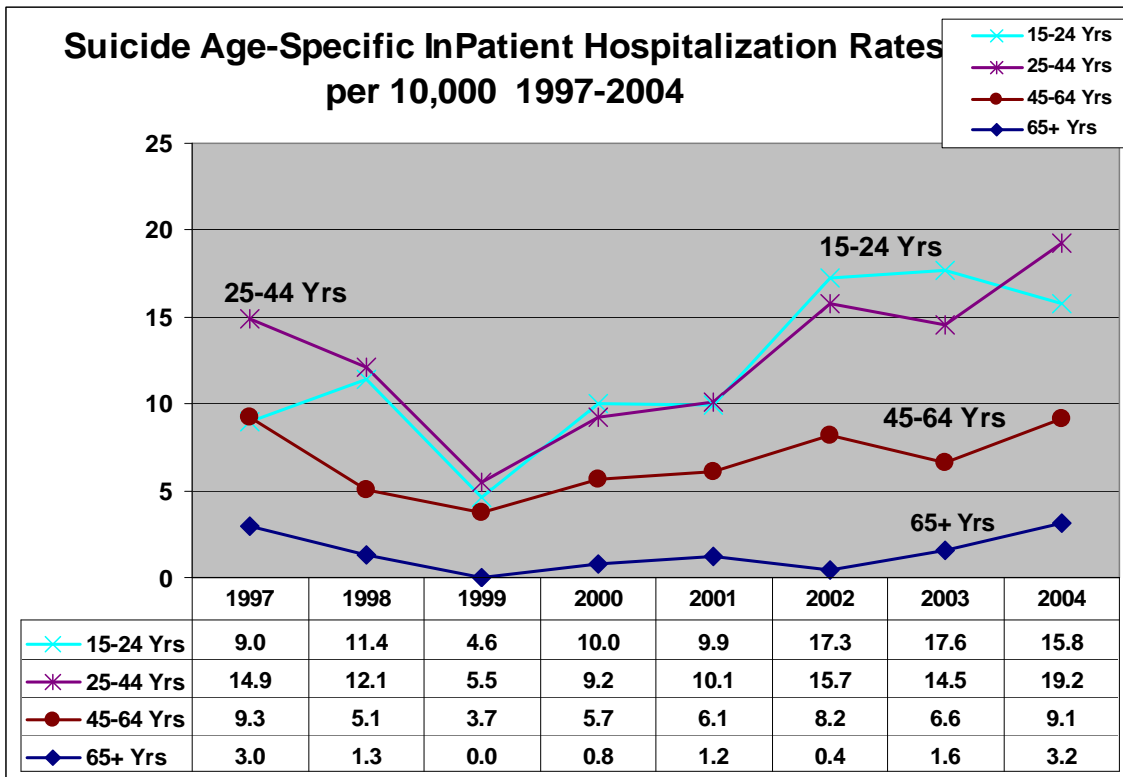
The above table lists the frequency and percentage of total injuries for Out and Inpatient hospitalizations. Other Accidents, Falls, and Motor Vehicle Accidents are prevalent on both lists.

“Other Accidents” is a composite measure of a variety of accidents that involve high and low pressure changes, travel, hunger, thirst, neglect, venomous animal, mechanical suffocation, foreign body entering the eye, orifice, object striking, caught between object, an injury caused by machinery, cutting piercings, explosion, over-exertions and strenuous movements and late effects of an accidental injury (that is, their sequelae).

“Medical” is a category representing medical complications and mishaps.

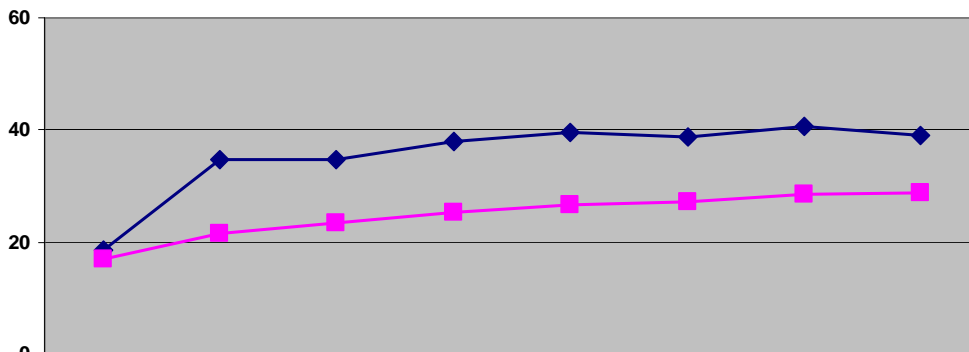


The Inpatient Suicide injury is notable in a couple of different age categories. First, for all age-groups, the crude rate for Sullivan County shows a significant drop between 1997 and 1999 and then an abrupt, constant rise until 2004. Sullivan County's rate is almost 30% higher than TN. Sullivan County's average annual percentage increase was 12.7%.



The age-groups 15-24 and 25-44 are being hospitalized at the same rate although the actual number of 25-44 year olds is almost three times the number of 15-24 year olds. The frequency and rate of 45-64 year olds are about ½.

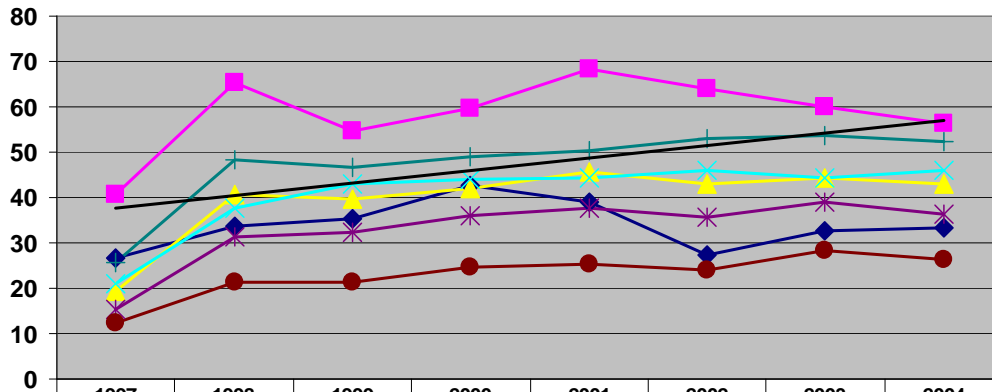
Crude Falls Emergency Room Rates per 1,000 Sullivan Co + TN 1997-2004



	1997	1998	1999	2000	2001	2002	2003	2004
◆ Sullivan	18.6	34.7	34.7	37.8	39.5	38.6	40.6	39.0
■ TN	17.1	21.6	23.3	25.2	26.6	27.3	28.4	28.7

Sullivan County residents experience more falls than TN residents. During the years depicted, the rate has been rising steadily and remains above that of TN's.

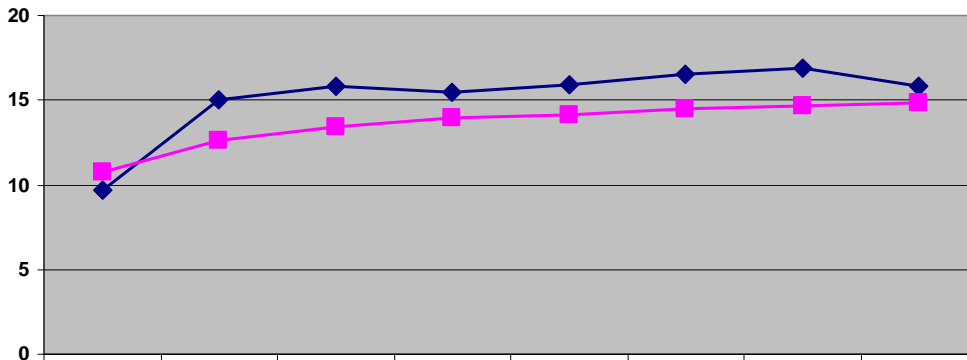
Falls Age-Specific Emergency Room Rates per 1,000 Sullivan County 1997-2004



	1997	1998	1999	2000	2001	2002	2003	2004
Under 1	26.5	33.6	35.5	42.8	38.9	27.3	32.5	33.5
1-4 Yrs	40.7	65.3	54.6	59.8	68.3	64.0	59.9	56.2
5-14 Yrs	19.3	40.5	39.6	42.1	45.8	43.1	44.2	43.1
15-24 Yrs	21.1	37.6	43.0	44.0	44.2	46.1	44.3	46.1
25-44 Yrs	15.4	31.3	32.2	35.9	37.5	35.8	39.0	36.2
45-64 Yrs	12.4	21.2	21.2	24.7	25.4	24.0	28.3	26.4
65+ Yrs	25.8	48.2	46.6	48.8	50.3	52.9	53.6	52.2

The graph above shows falls by age-group. The age-group 1-4 experiences the highest rate of falls and they are followed by those 65 + years old. The actual number of 1-4 year-olds is 393 versus 1,324 sixty-five + year olds. There are a large number of individuals for each age group who actually fall requiring ER services. Falls is the 8th cause of death among those > 65.

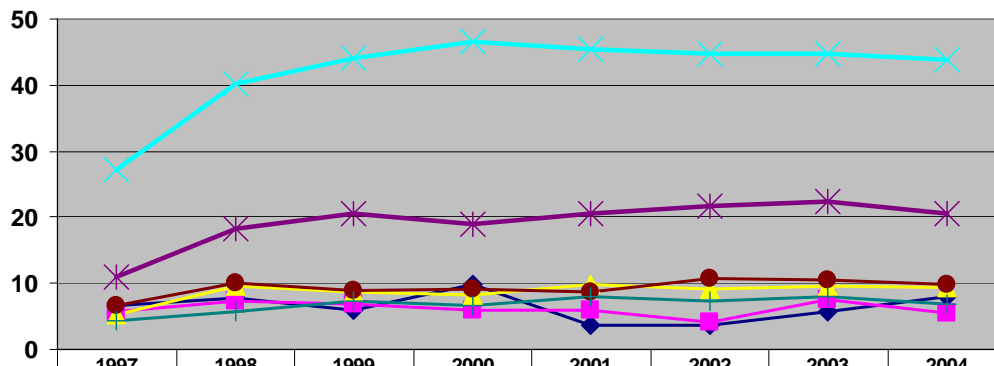
Crude Motor Vehicle Accidents Emergency Room Rates per 1,000 Sullivan Co + TN 1997-2004



	1997	1998	1999	2000	2001	2002	2003	2004
◆ Sullivan	9.7	15.0	15.8	15.5	15.9	16.5	16.9	15.9
■ TN	10.8	12.6	13.4	13.9	14.1	14.5	14.6	14.8

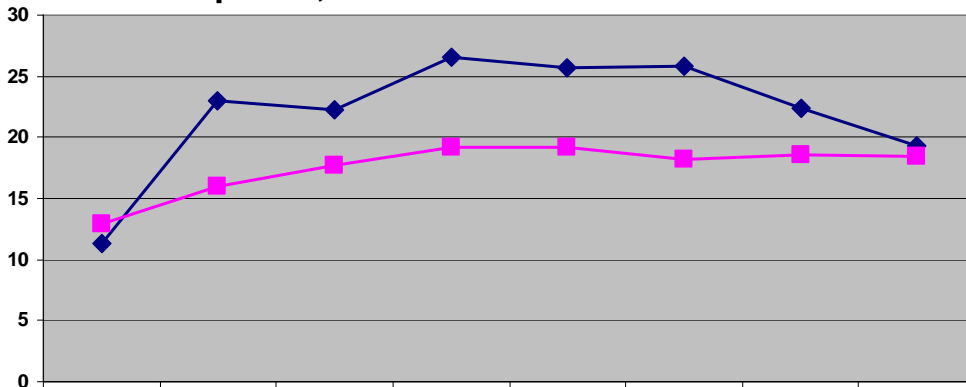
Emergency room visits necessitated by motor vehicle accidents have been increasing consistently over the past 8 years. The mean rates are not that different between Sullivan County and Tennessee: 15.2 vs. 13.6 per 100,000. However, the average annual percent increase is more slightly greater in SC: 9.8% vs. 5.6%.

Motor Vehicle Accidents Age-Specific Emergency Room Rates per 1,000 Sullivan County 1997-2004



The age-group 15-24 has the highest mean rate (42.1 per 1,000) of motor vehicle accidents that required emergency room hospitalizations. They also have the second highest count of accidents. This group is followed by 25-44 year olds with a mean rate of 19.2 per 1,000 (two times less than 15-24 year olds).

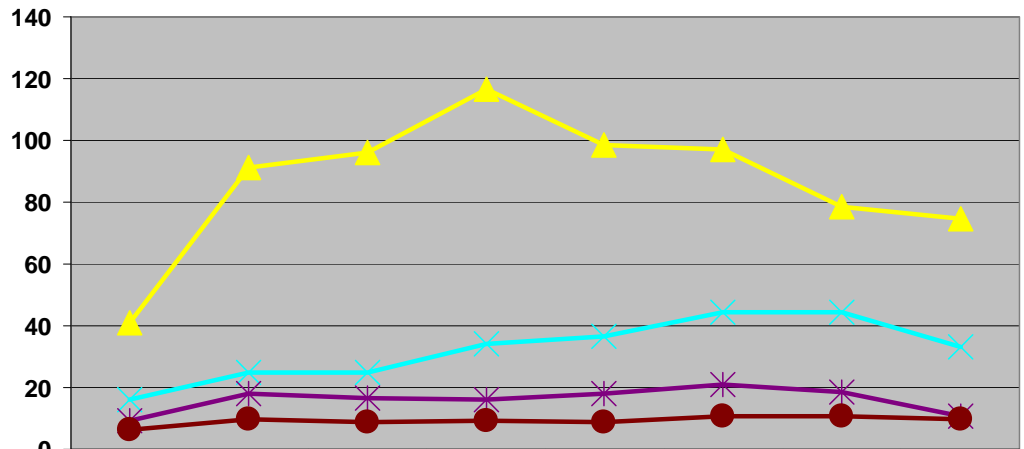
**Crude Other Transport Accidents Emergency Room
Rates per 10,000 Sullivan Co + TN 1997-2007**



	1997	1998	1999	2000	2001	2002	2003	2004
◆ Sullivan	11.3	23.0	22.2	26.6	25.7	25.8	22.4	19.4
■ TN	12.9	16.0	17.7	19.2	19.1	18.1	18.6	18.5

Other Transport Accidents is a category that represents modes of transportation such as bicycles, tricycles, all terrain vehicles, recreational water accidents, and air and space transport. The trend line shows that overall, this injury mechanism is rising. Sullivan County’s eight year mean rate is 22.1 per 10,000.

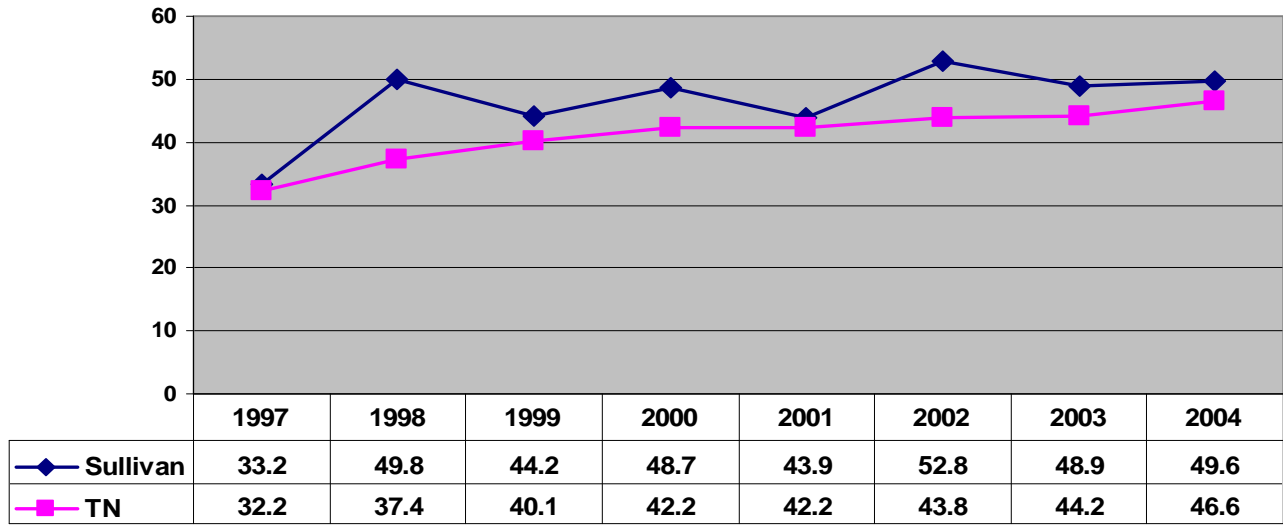
**Other Transport Accidents Age-Specific Emergency
Room Rates per 10,000
Sullivan County 1997-2004**



	1997	1998	1999	2000	2001	2002	2003	2004
5-14 Yrs	40.8	91.4	96.0	116.6	98.8	97.1	78.4	74.5
15-24 Yrs	16.3	25.1	24.9	34.2	36.7	44.3	44.4	33.2
25-44 Yrs	9.1	17.9	16.4	15.9	18.0	21.2	18.7	10.8
45-64 Yrs	6.5	10.0	8.8	9.2	8.8	10.8	10.5	9.8

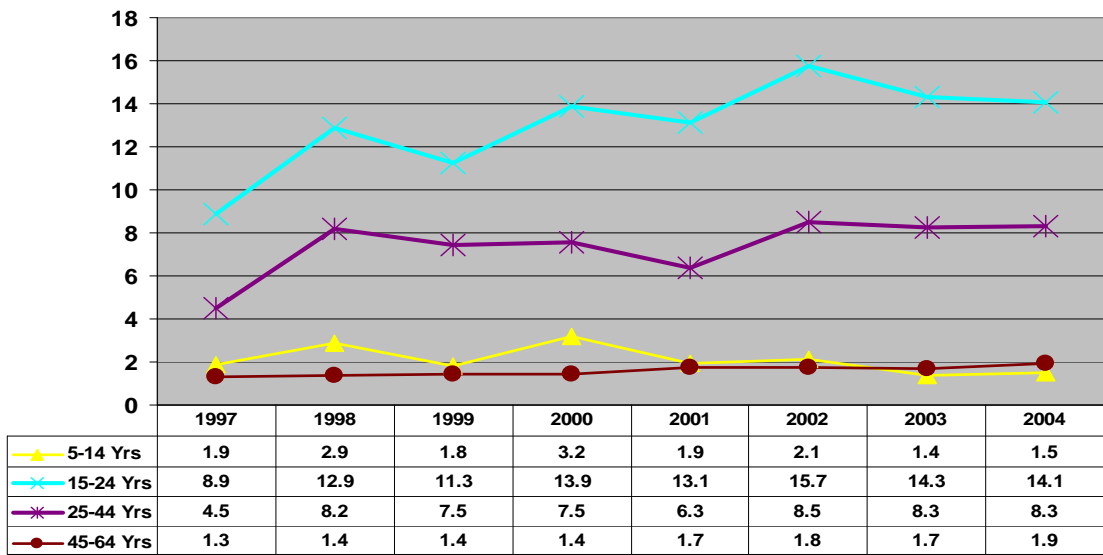
The age-group of 5-14 year-olds stands out as the experiencing the highest prevalence of Other Transport Accidents. The mean rate was 86.7 per 10,000 which is almost three times the rate of 15-24 year-olds who had the second highest rate. The 5-14 age-group rate increased annually by an average of 33%. The 15-24 age group rate rose annually by 18.2%.

Crude Assault Emergency Room Rates per 10,000 Sullivan Co + TN 1997-2007



Assault is the fourth leading injury. The overall crude rate rose by 9% per year. Sullivan County's mean rate of 46.4 per 10,000 is just slightly higher than Tennessee's.

Assault Accidents Age-Specific Emergency Room Rates per 1,000 Sullivan County 1997-2004

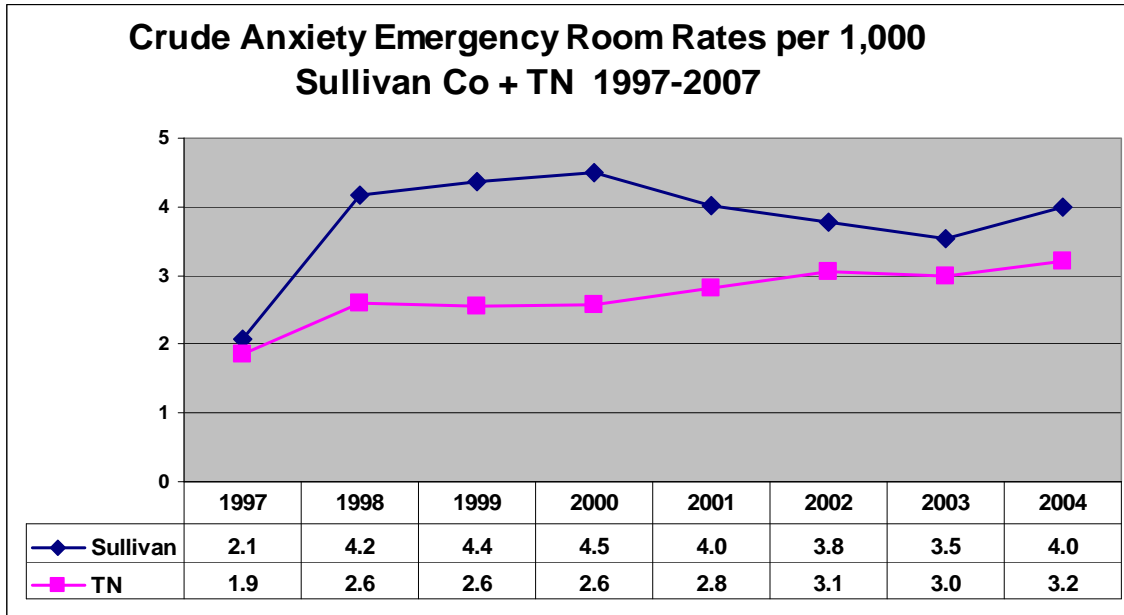


Thirteen out of every 10,000 15-24 year-olds seek medical attention following an assault (13 out of every 10,000). This rate has been increasing by 10% per year.

The second most common group requiring hospitalization for injuries from assault is the 25-44 year-olds. Seven out of 10,000 people in this age group go to the ER annually. The current rise in rate is approximately 7% per year.

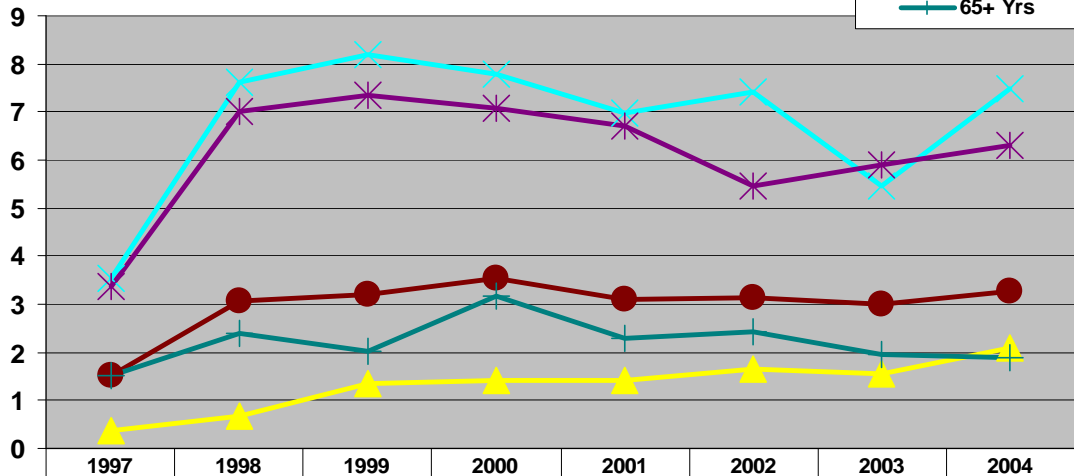
Mental and Behavioral Disorders

This body system was number six in emergency hospitalization and is third for inpatient hospitalization. Mental and Behavioral disorders include such diseases as anxiety, mood, alcohol and drug dependence and misuse, psychoses such as schizophrenia, dementia, autism, hyperactivity, development delays, and mental retardation.



Anxiety is the leading cause of the Mental/Behavioral category. It describes those with anxiety states, stress and adjustment reactions. Crude rates are slightly higher in Sullivan County than in Tennessee. The mean rate for this disease is 3.8 per 1,000 and the rate has been rising on average by 16.4% per year.

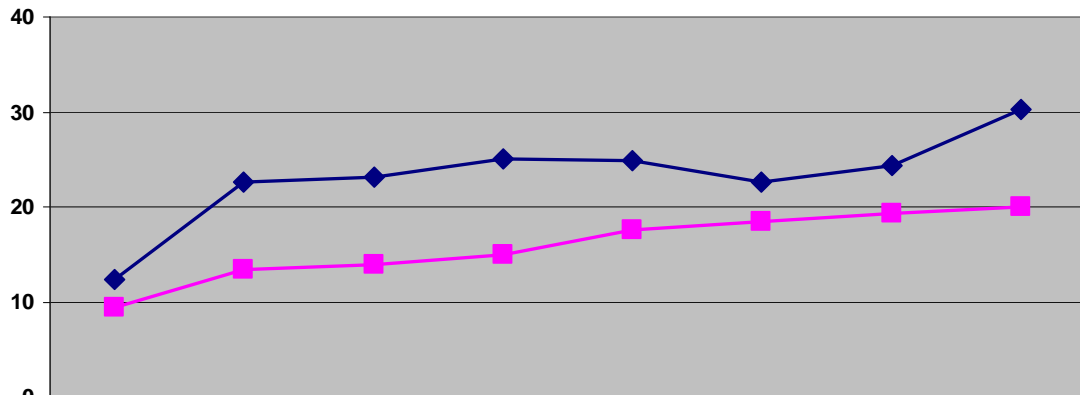
Anxiety Age-Specific Emergency Room Rates per 1,000 Sullivan County 1997-2004



▲ 5-14 Yrs	0.4	0.7	1.4	1.4	1.4	1.6	1.5	2.1
✕ 15-24 Yrs	3.5	7.6	8.2	7.8	7.0	7.4	5.5	7.5
✱ 25-44 Yrs	3.4	7.0	7.3	7.1	6.7	5.5	5.9	6.3
● 45-64 Yrs	1.5	3.1	3.2	3.5	3.1	3.1	3.0	3.3
—+ 65+ Yrs	1.5	2.4	2.0	3.2	2.3	2.4	2.0	1.9

The age-specific rates for those affected by anxiety are following a similar pattern to assault. 15-24 and 25-44 year-olds are the most likely groups to go to the emergency room for medical treatment (7 out of every 1,000). Each age group saw a rise in its average annual percentage change and the rate of increase is most pronounced in the 5-14 or 15-24 group. Between 1997 and 2004 the average annual percent increase for 5-14 year-olds was 38.7%.

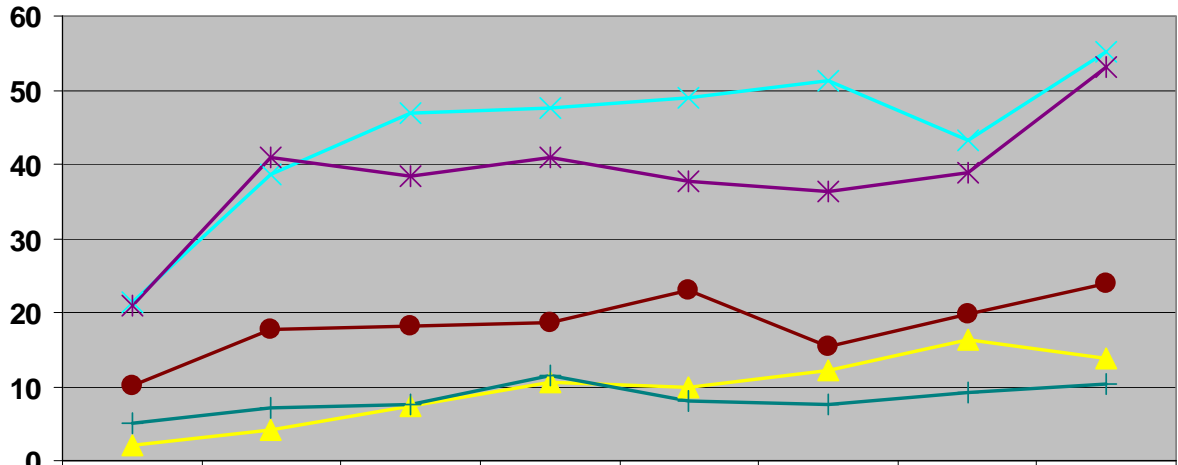
Crude Mood Emergency Room Rates per 10,000 Sullivan Co + TN 1997-2007



	1997	1998	1999	2000	2001	2002	2003	2004
◆ Sullivan	12.3	22.6	23.2	25.0	24.8	22.6	24.3	30.3
■ TN	9.4	13.5	14.0	15.0	17.5	18.4	19.2	19.9

Mood is the next most important group of disease in the Mental/Behavioral disorders category. Mood disorders include depression and manic states. The above graph shows that Sullivan County is leading TN by an average of 15% per year. The mean 8-year rate for Sullivan County is 23.1 per 10,000. Both regions have experienced a steady increase in Mood rates but Sullivan County's average annual percent increase was slightly higher at 19.5% per year.

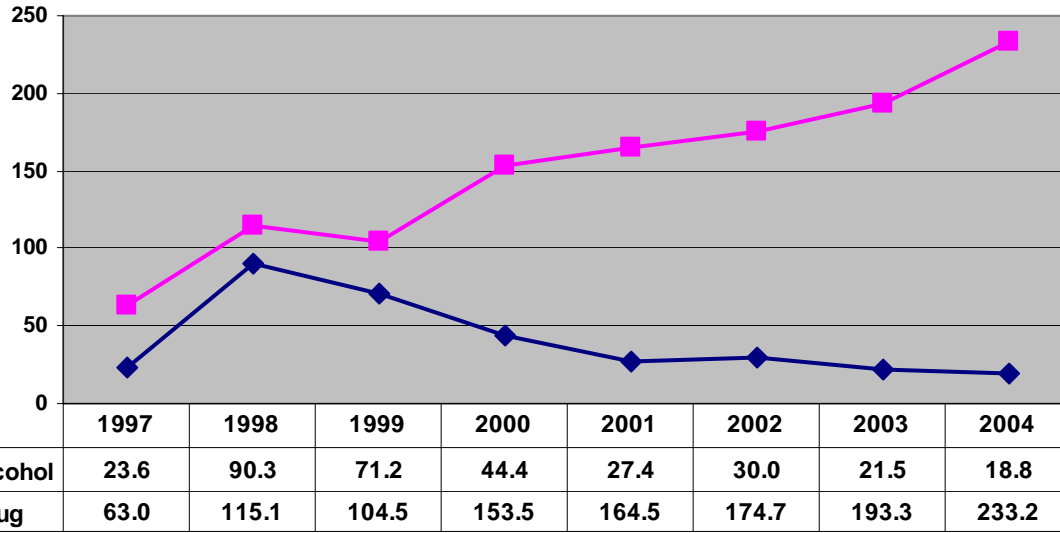
Mood Age-Specific Emergency Room Rates per 10,000 Sullivan County 1997-2004



	1997	1998	1999	2000	2001	2002	2003	2004
▲ 5-14 Yrs	2.1	4.2	7.3	10.5	10.0	12.1	16.4	13.8
× 15-24 Yrs	21.4	38.7	47.0	47.7	48.9	51.2	43.3	55.1
* 25-44 Yrs	20.9	40.8	38.4	41.0	37.7	36.2	38.8	53.0
● 45-64 Yrs	10.0	17.7	18.1	18.7	23.1	15.4	19.7	23.9
+ 65+ Yrs	5.1	7.2	7.5	11.5	8.1	7.7	9.2	10.3

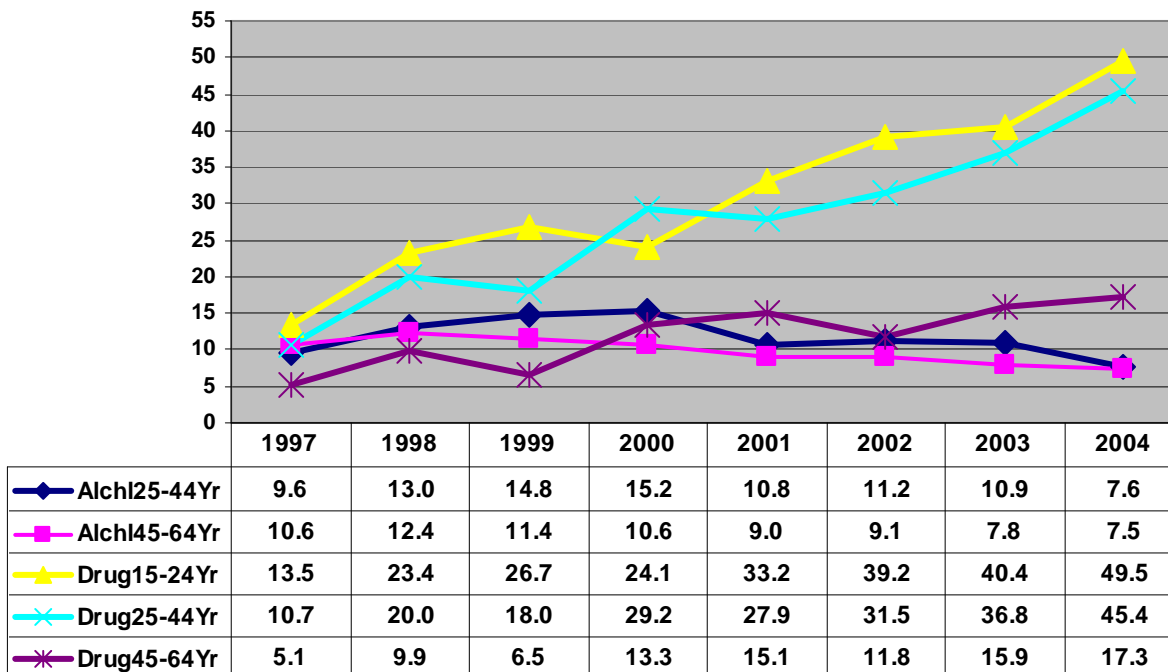
As with anxiety, mood seems to be affecting more 15-24 and 25-44 year olds. Their mean rates were 44.2 and 38.4 per 10,000. All age groups saw a consistent rise in ER hospitalization over the 8 years with 15-24 year olds increasing the most. In 1997, 15-24 year-olds visited the ER at a rate of 21.4 per 10,000 and in 2004, their visit rate increased by 157% to 55.1 per 10,000. The rate for those 5-14 years of age was 2.1 per 10,000 in 1997 and over the 8 years, there was a 7-fold increase in the rate these young people visited the ER for treatment for anxiety and/or depression.

Crude Drug + Alcohol ER Hospitalization Rates per 10,000 Sullivan Co 1997-2004



Emergency Room usage for drug use has risen sharply over the past 8 years: the mean rate of 150.2 per 10,000. This is almost 4 times the mean rate for ER hospitalization for alcohol (mean rate = 40.9 per 10,000).

Crude Drug + Alcohol ER Hospitalization Rates per 10,000 Sullivan Co 1997-2007



Alcohol rates of ER use have dropped for both age-groups but they have risen steadily for the 15-24 year-olds and 25-44 year-olds.

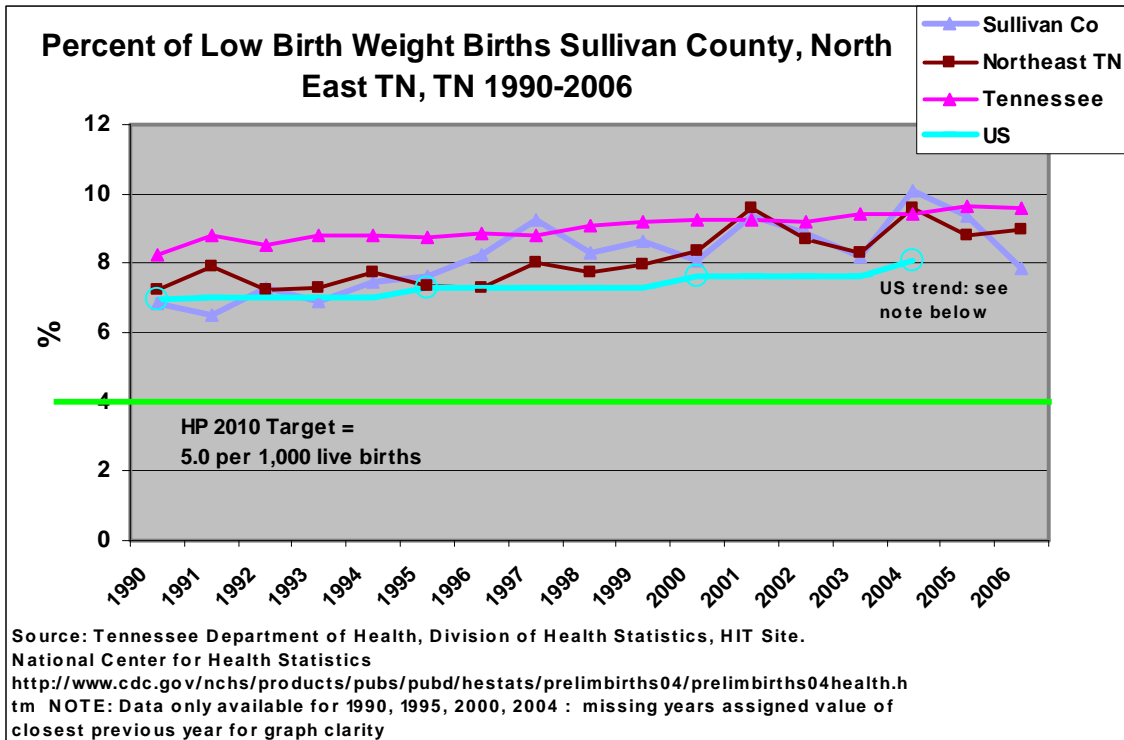
Injuries 2004 All Age Groups

Out Patient Hospitalization 2004				In Patient Hospitalization 2004			
		n	%			n	%
1	Other Accidents	9937	48.4	1	Falls	774	31.4
2	Falls	6,003	29.2	2	Medical	749	30.4
3	Motor Vehicle Accidents	2,441	11.9	3	Other Accidents	312	12.6
4	Assault	711	3.5	4	Motor Vehicle Accidents	216	8.8
5	Medical	678	3.3	5	Suicide	155	6.3
6	Other Transport	298	1.4	6	Poisoning Drugs	70	2.8
7	Suicide	184	0.9	7	Other Organic	62	2.5
8	Poisoning GV + SL	127	0.6	8	Assault	46	1.9
9	Poisoning Drugs	112	0.5	9	Choking	27	1.1
10	Firearm	32	0.2	10	Other Auto	20	0.8
11	Heat	17	0.1	11	Other Transport	15	0.6
12	Choking	8	0.0	12	Poisoning SL + GV	13	0.5
13	Drowning	2	0.0	13	Firearm	8	0.3
14	Lightening	1	0.0		Total Injuries	2,467	100
15	War	1	0.0				
	Total Injuries	20,552	100				

Mental and Behavioral Disorders

Out Patient Hospitalization 2004				In Patient Hospitalization 2004			
		n	%			n	%
	Anxiety	616	36.3	1	Mood	662	64.3
	Mood	467	27.5	2	Psychoses	88	8.5
	Drug	359	21.2	3	Dementia	75	7.3
	Psychoses	119	7.0	4	Drug	73	7.1
	Other Organic	101	6.0	5	Alcohol	68	6.6
	Alcohol	29	1.7	6	Anxiety	64	6.2
	Mental Retardation	3	0.2	7	Total Mental/Behavl	1,030	100
	Dementia	2	0.1				
	Total Mental/Behavl	1,696	100				

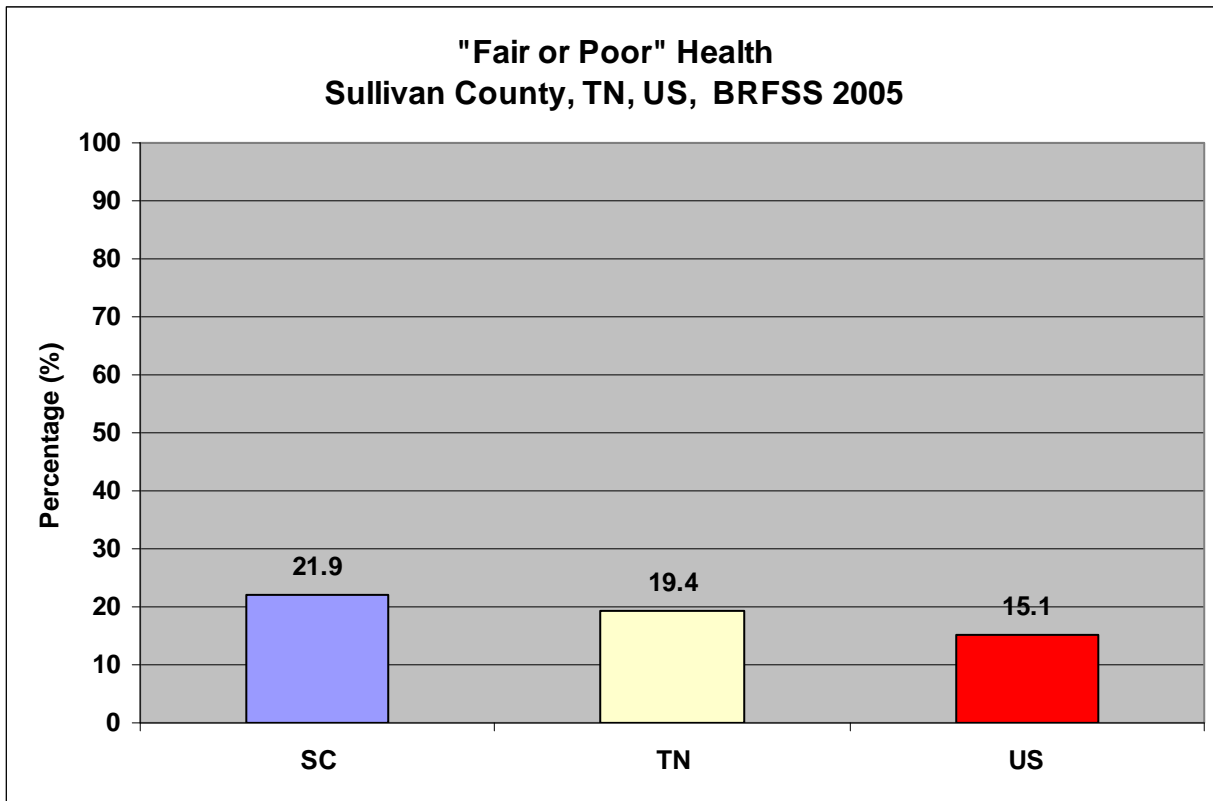
LOW BIRTH WEIGHT



Low birth weight (LBW) is a significant cause of poor birth outcomes and for those surviving children, a significant cause of learning disorders and medical complications. In Sullivan County, the 15-year average rate at which babies are born with a low birth weight is 8.2 (per 100 live births) which is slightly lower than Northeast Tennessee and Tennessee’s average rates of 8.1 and 9.0 (per 100 live births). While the US preliminary rate of 8.1 % corresponds to Sullivan County’s average, it is important to note that the trend of LBW is rising in all areas but the increase is more pronounced in the northeast Tennessee region than the national rate.

HEALTH STATUS

Behavioral Risk Factors (BRFSS 2005)

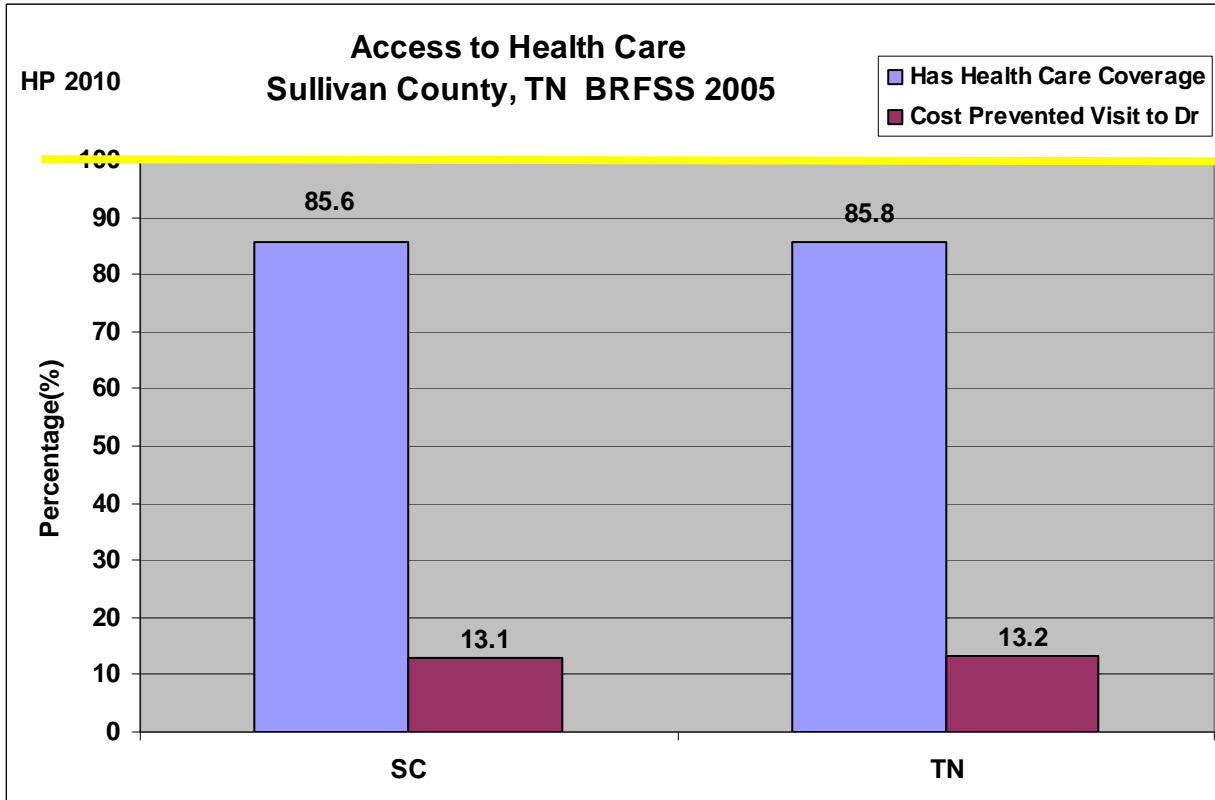


Source: Behavioral Risk Factor Surveillance Survey 2005

A key measure of general health status and quality of life is “perceived” health. Even though perceived health is subjective, it has been shown to be a predictor of illness, mortality and functional disability. BRFSS respondents were asked to rate their own health using a scale of excellent, very good, good, fair or poor. Eighty percent of the Sullivan County residents rate their own health quite favorably while 22% would say that their health was fair or poor. Sullivan County residents’ self-perceived health is not significantly different from Tennessee’s where roughly 1 in 5 in both regions report fair or poor health. Nationally, less people (15.1%) rate their health as poor or fair.

HEALTH DETERMINANTS

HEALTH CARE

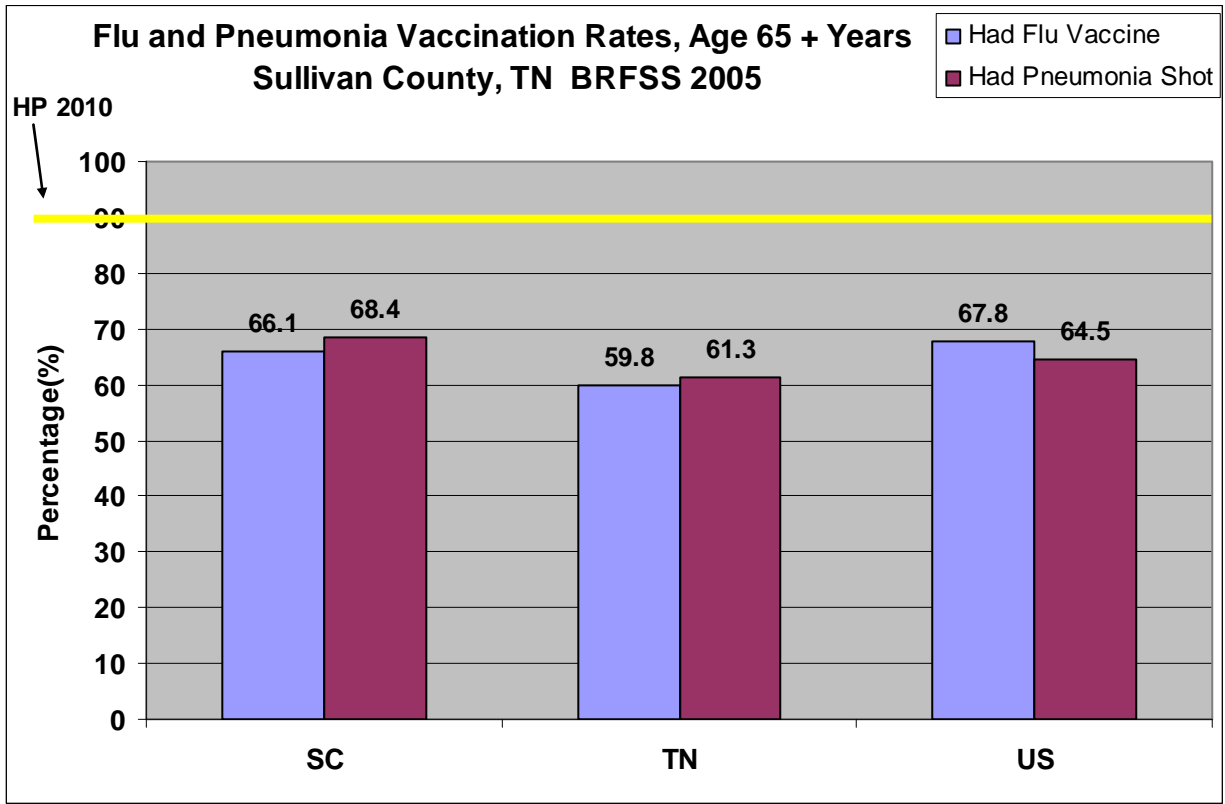


Eighty-six percent of residents in Sullivan County and Tennessee residents who responded to questions about health care access (health insurance, enough funds) reported having health care. The national proportion is 85.1%. Despite this high proportion of health care coverage, 13% reported that they were unable to see a doctor because of cost at some point in the previous 12 months. The Healthy People 2010 target is to increase the proportion of persons with health insurance to 100% of adults under the age of 54 years.

Doctors per capita – will be included in the SC Health Profile.

Dentists per capita – will be included in the SC Health Profile.

Percent without pneumococcal and influenza vaccinations not displayed for the entire population but for seniors aged 65+ years.

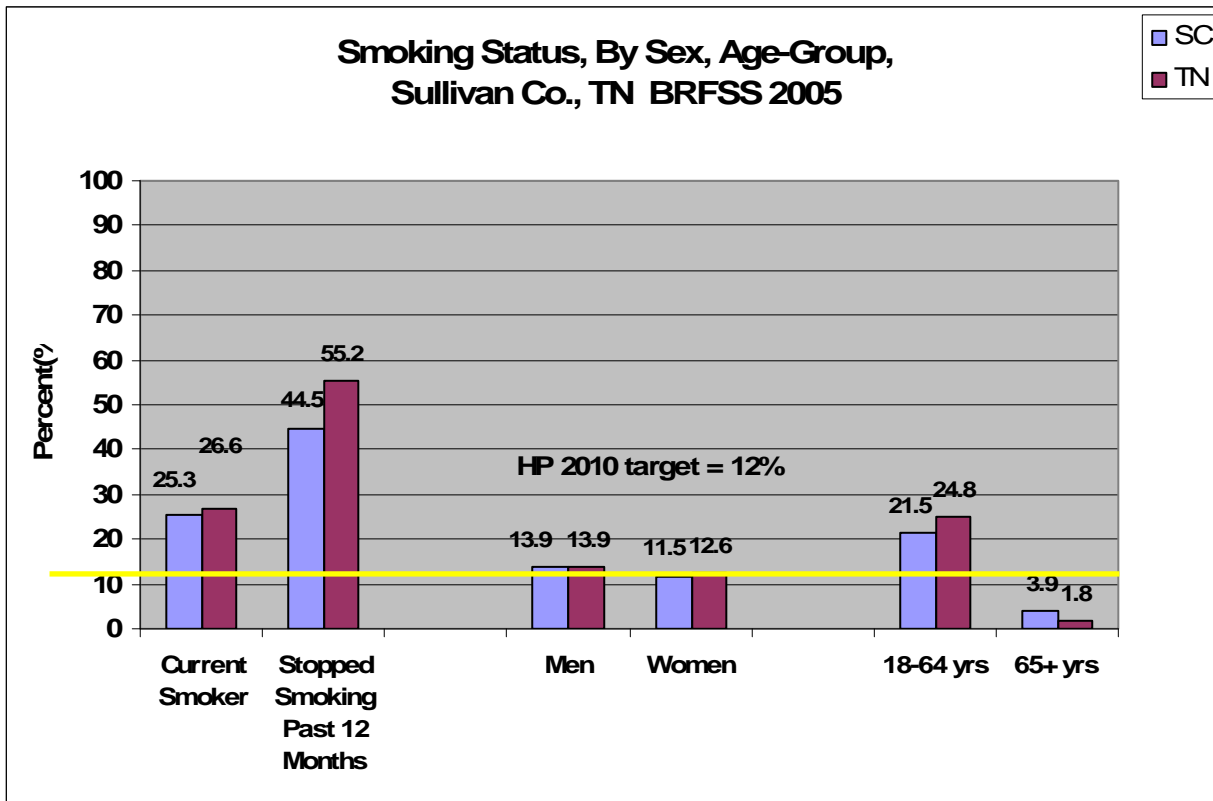


Most healthy adults are not threatened by influenza and pneumonia but these diseases continue to be a threat for those 65 years and older and the immune compromised. Annual vaccinations for the flu and a one-time vaccination for pneumonia are recommended for the entire population but in particular, for adults 65 years and older and for those with certain health conditions. The Healthy People 2010 target is to have 90% of those 65 years and older annually receive the flu vaccine and 90% of this age-group vaccinated against pneumonia. About 2/3 of this adult sub-group in Sullivan County is vaccinated for both these diseases and the proportion vaccinated is 10% higher than Tennessee. It is about on par with the nation but rates are still below the objective.

The following graphs will be included in the SC Health Profile:

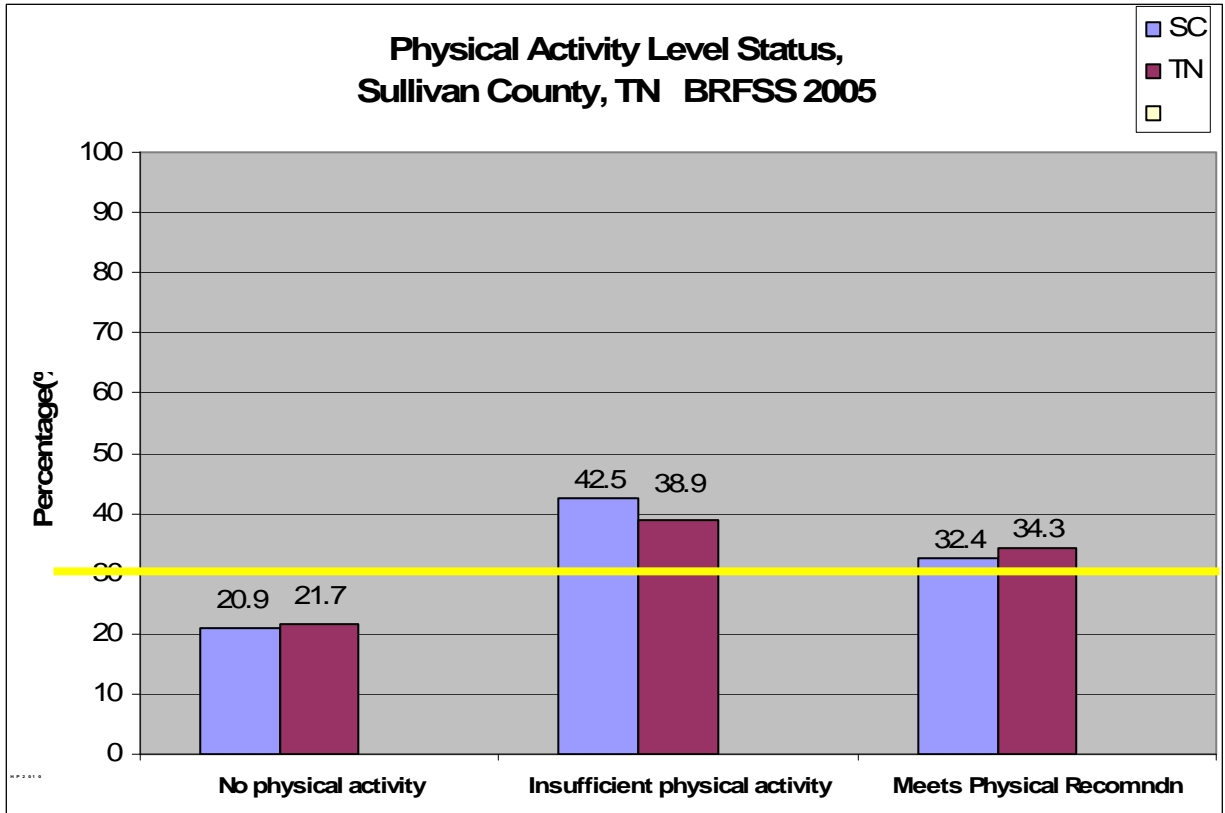
- No diabetic eye exam %
- No diabetic lipid profile %
- No diabetic HbA1c testing %
- No biennial mammography %

HEALTH BEHAVIORS

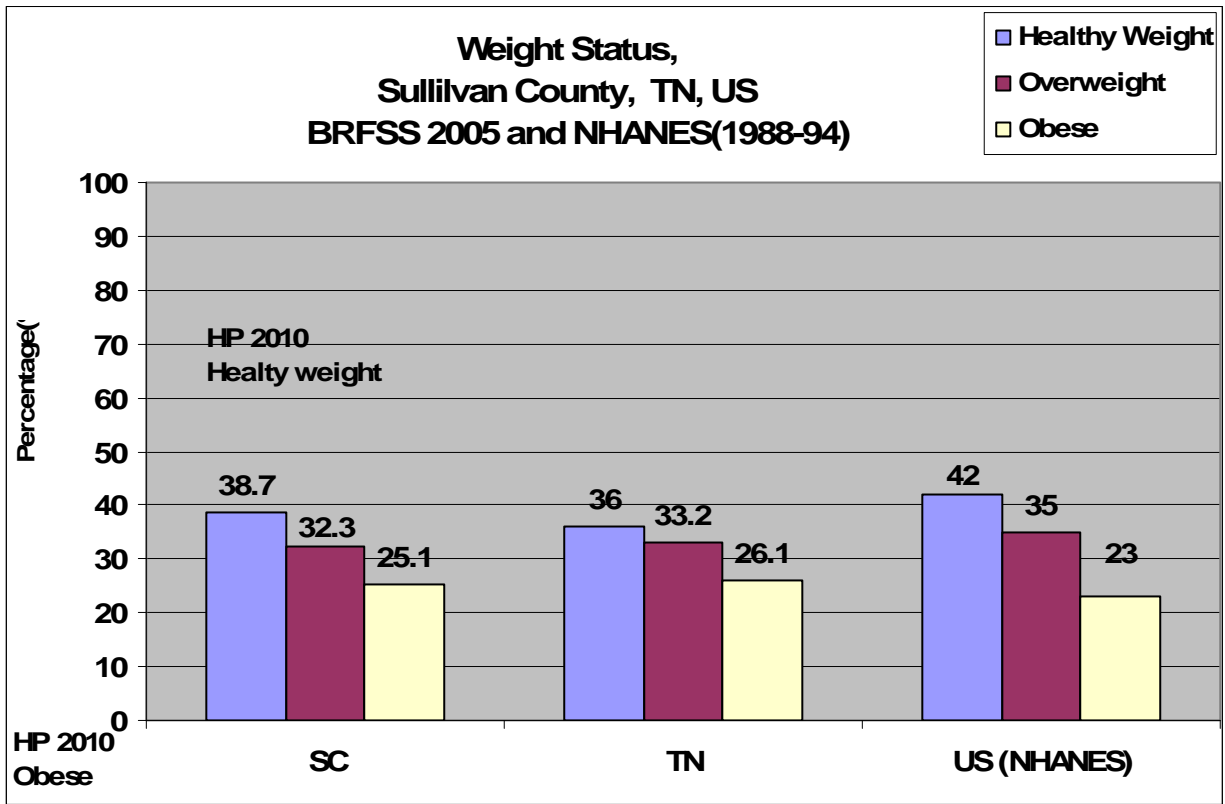


Tobacco is a well-established risk factor for many of Sullivan County’s top causes of death. Maternal tobacco use is associated with mental retardation and birth defects. Asthma is triggered or worsened with exposure to cigarette smoke. The Health People 2010 target is to reduce illness, disability and death related to tobacco use and exposure to second hand smoke. To achieve this, Health People 2010 has set 4 areas with multiple objectives. One is to reduce tobacco use by adults to 12%. Respondents in Sullivan County who are current smokers total 25%. A few more men smoke than women and respondents >65 years old are less likely to be smokers. Sullivan County’s self-reported smoking status (25.3%) is 5.3% higher than national figures (US = 20.6%). Another HP2010 objective to achieve the goal is to increase the number of attempts by adult smokers to quit smoking. Approximately 45% of SC respondents reported quitting in the past 12 months which is 10% lower than the proportion quitting in TN.

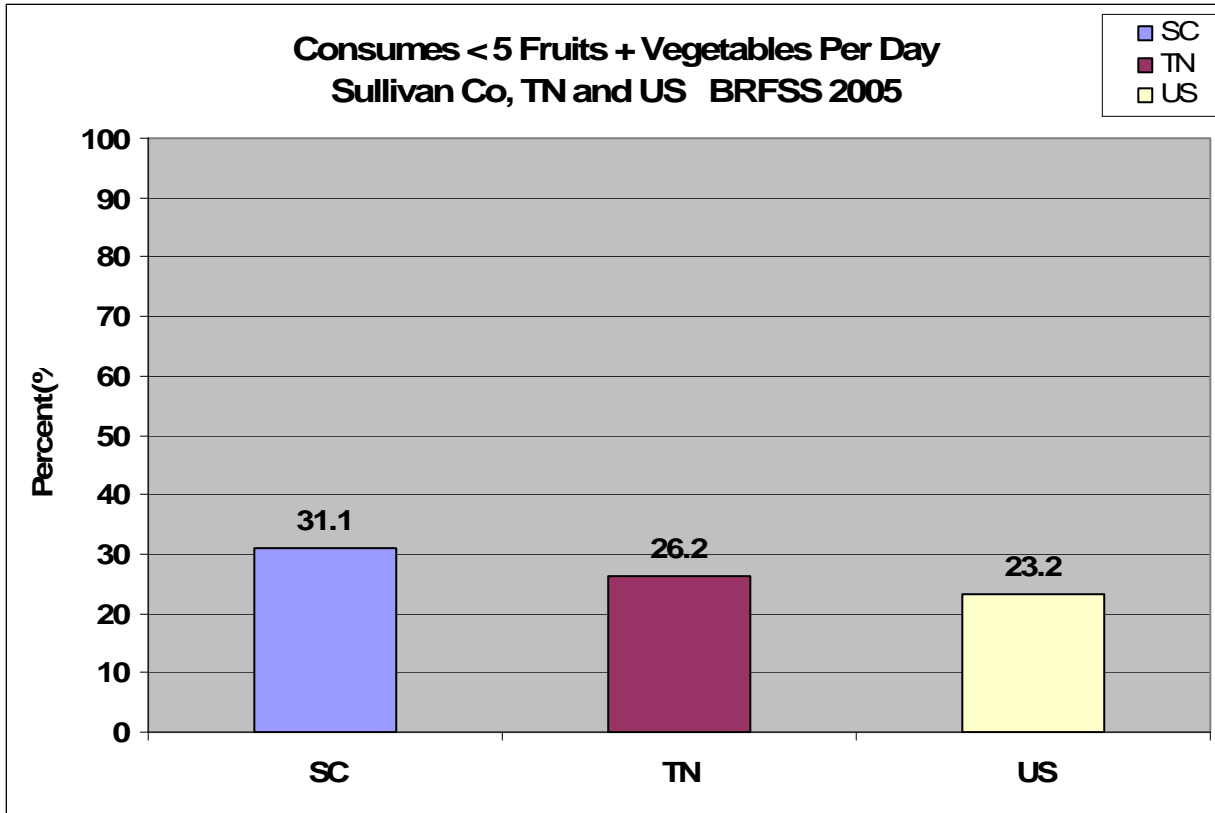
Smoking during pregnancy will be included in the SC Health Profile.



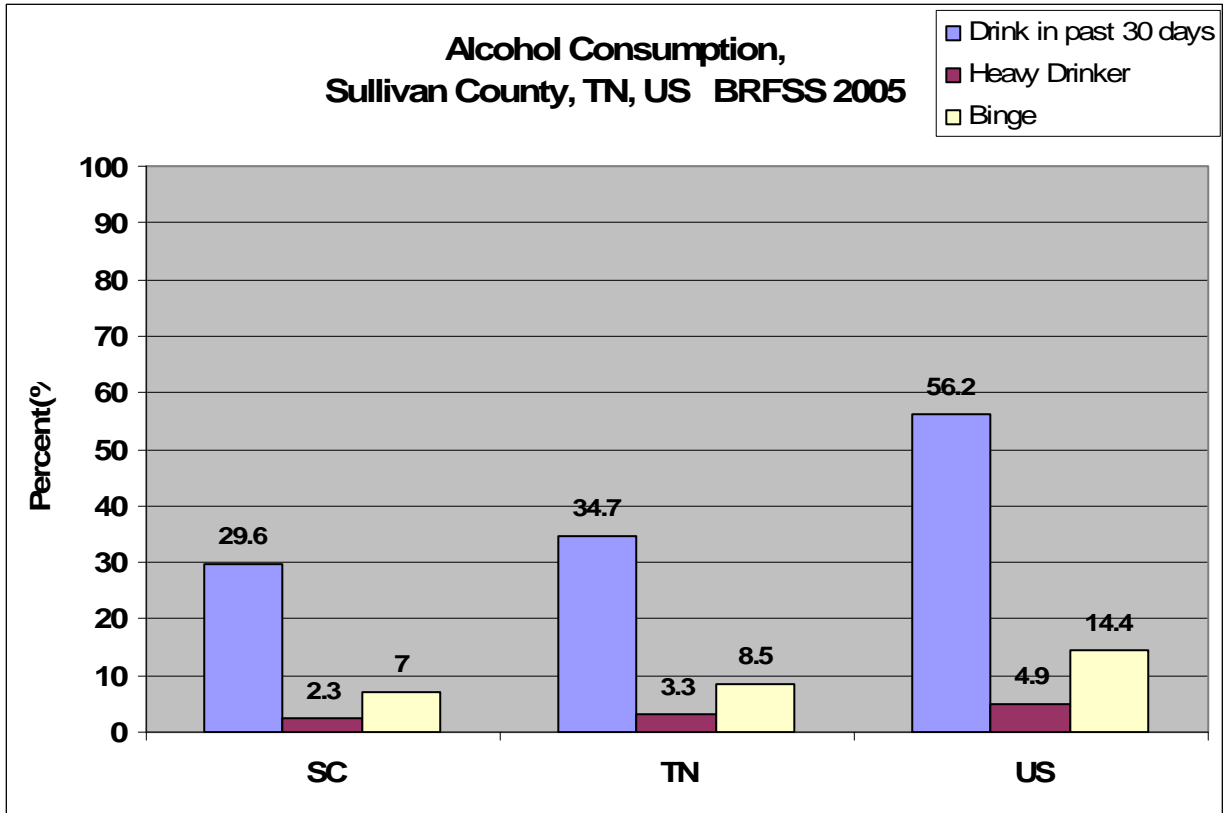
In the Behavioral Risk Factor Surveillance Survey on physical activity, respondents were asked questions about the frequency and duration of their exercise. Some exercise is better than no exercise but to be really effective, one must engage in moderate exercise (a small increase in one’s heart rate for at least 30 minutes 5 days a week) or vigorous exercise (a large increase in breathing or heart rate for 20 minutes 3 days a week). Looking at this chart, not quite one-third of Sullivan County residents are achieving the protective benefits of exercise and TN is similar. When asked these questions, one can see that the proportion of those who do not exercise at all is 21% which is 10% lower than what was reported. Almost 2/3 of Sullivan County’s population is not exercising at all or adequately for good health.



Being overweight or obese are conditions that have been growing steadily, especially since the 1980s. A healthy weight is determined by the Body Mass Index (BMI) which one's weigh in kg/ their height in square meters. A BMI between 25-29 classifies one as overweight and a person with a BMI ≥ 30 is considered obese. Sullivan County's proportion of respondents with a healthy weight is 38.7% which is slightly better than TN and about 8% lower than the nation. The Healthy People 2010 objective for healthy weight is to increase the proportion of adults with a healthy weight to 60% which is 35% increase over present numbers. Another objective is to decrease the proportion of obese adults to 15%. Twenty-five percent of Sullivan County's respondents were obese.

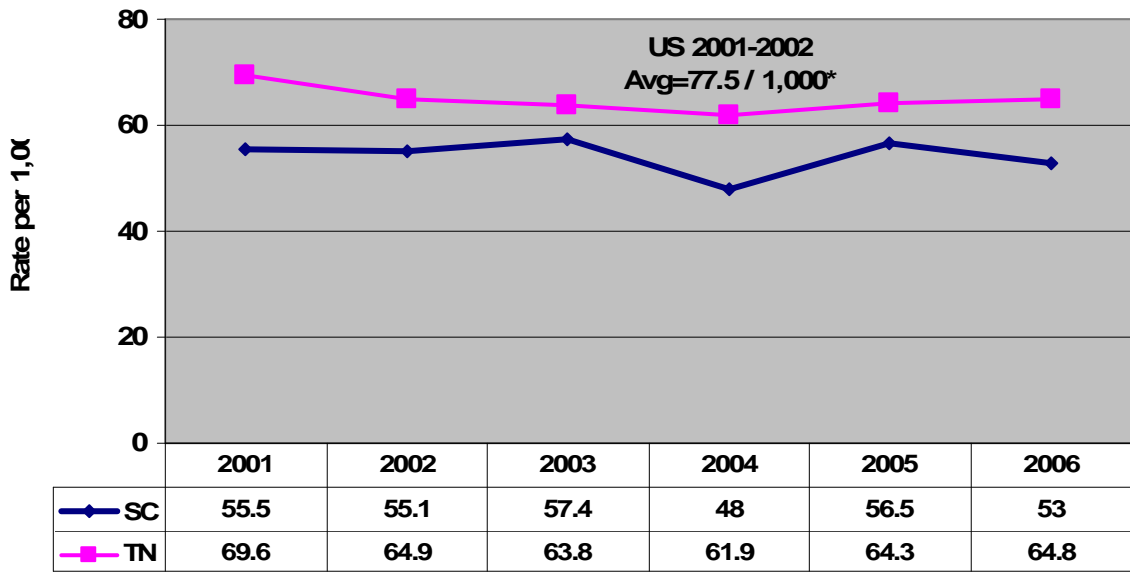


Nutrition is associated with 4 of the top causes of death – heart disease, some cancers and specifically 3 of the 4 top cancers in Sullivan County (breast, colon, prostate), stroke and diabetes (type 2). A main concern is consumption of too much fat and too few fruits and vegetables and grains. Insufficient amounts of these food groups contribute significantly to the burden of preventable illness and premature death. To address this, objectives to increase consumption of fruits and vegetables have been set. By 2010, it is hoped that 50% of the population will be eating 3 servings of vegetables (1 dark green and 1 orange) and 75% will be eating 2 servings of fruit per day. When asked how often they eat fruits and vegetables, the combined response was 31.1% in Sullivan County which was 2.5 times lower than the target for fruit and 1.6 times lower than the target for vegetables. However, Sullivan County is doing better in this behavior than the state and nation.



Excessive alcohol use has health repercussions for many parts of the body. There are some protective benefits for men aged 45+ years old who consume 2 or less drinks per day and 1 drink for women per day. When asked if they had at least one drink of beer, wine, malt beverage or liquor, only 30% of Sullivan County respondents reported that they had done so. The US prevalence is 56.2% which is nearly double Sullivan County's rate. Alcohol is often under-reported in surveys. In fact, an alcohol field is taken off the TN birth certificate because it was so badly reported and the state did not want to have to report false numbers. Other indicators for alcohol abuse include risk for binge drinking which is defined as having 5 or more drinks on one occasion and heavy drinking which for men is having more than 2 drinks per day and for women consuming more than 1 drink per day. Numbers for Sullivan County are half the national rate. These could be questioned especially since liver disease and cirrhosis is one of the top causes of death in the county.

**Sullivan Co + TN Pregnancy Rates per 1,000 Females
Aged 15-19 Years 2001- 2006**



Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics.

*Guttmacher Institute:

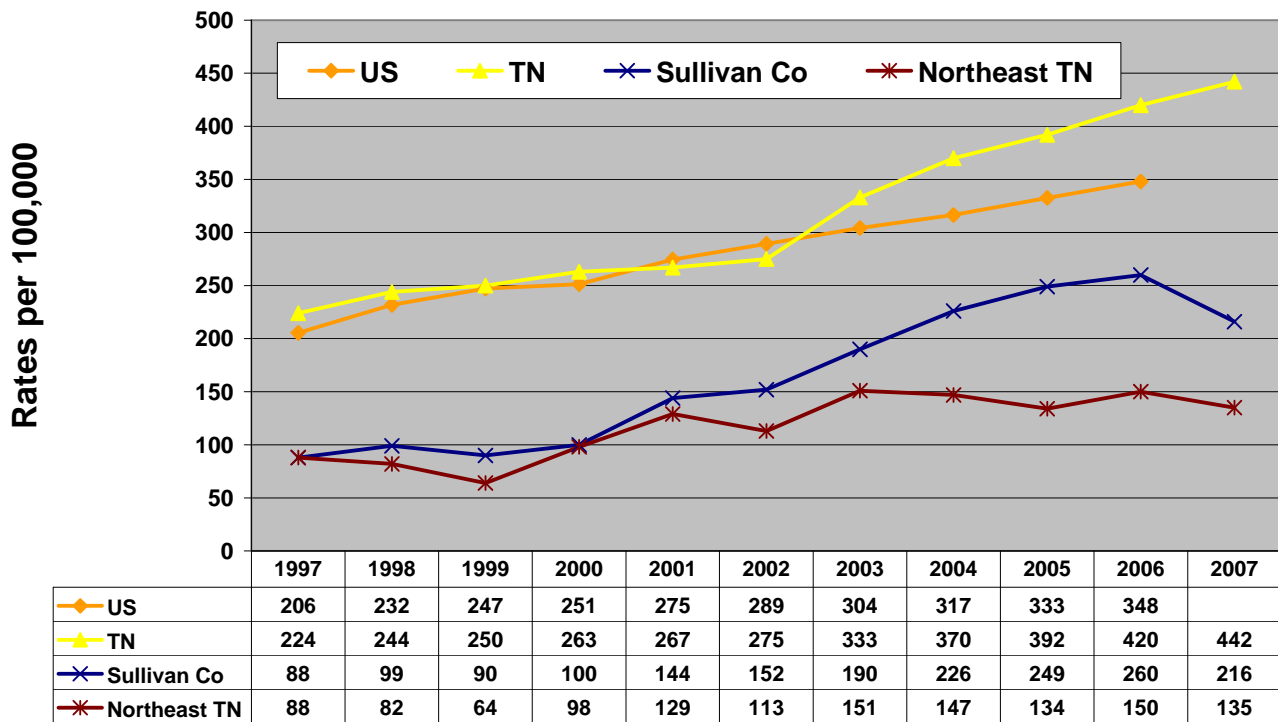
<http://www.guttmacher.org/pubs/2006/09/12/USTPstats.pdf>

Teen pregnancy rates have more or less remained stable in Sullivan County as well as in TN over the six year period from 2001 to 2006 with a marginal decrease in rates in both geographical areas. Throughout this time period, Sullivan County's rates were lower by almost 28% than the national average. However, in 2006, the rate continues to be persistently higher (23.3%) than the Healthy People 2010 objective of 43 per 1000 females between the ages of 15-19 years. Interventions through the mode of educational programs targeting young women at risk can help achieve this goal.

Sexually transmitted diseases (STD) (rates per 100,000 population)

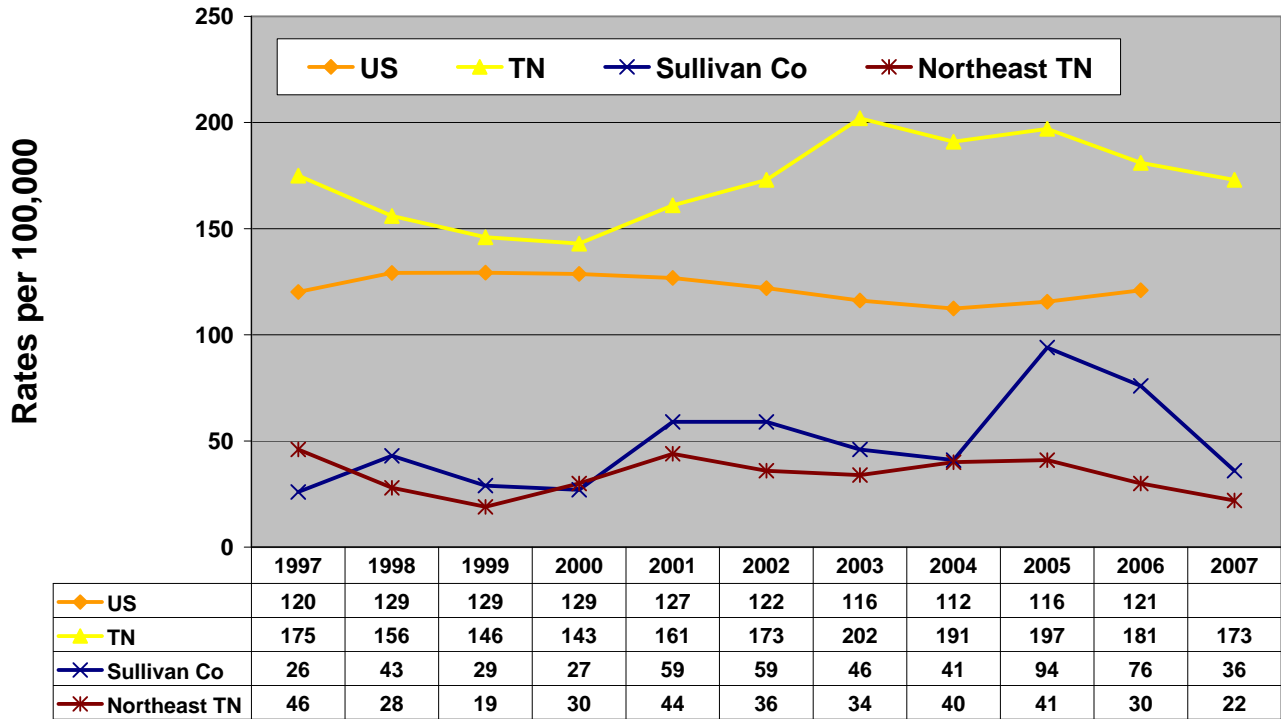
Sullivan County considers Chlamydia (CG) and Gonorrhea (GC) to be of greatest disease burden in the STD category. Disease rates (per 100,000 population) for Chlamydia and Gonorrhea have had exponential growth in Sullivan County and the State of Tennessee since 2002. (Note: the Tennessee Institute for Public Health Rankings Report includes CG, GC and other STDs in its comparisons.)

Chlamydia Rates Reported US, TN, Sullivan Co. & NE Region (1997-2007)



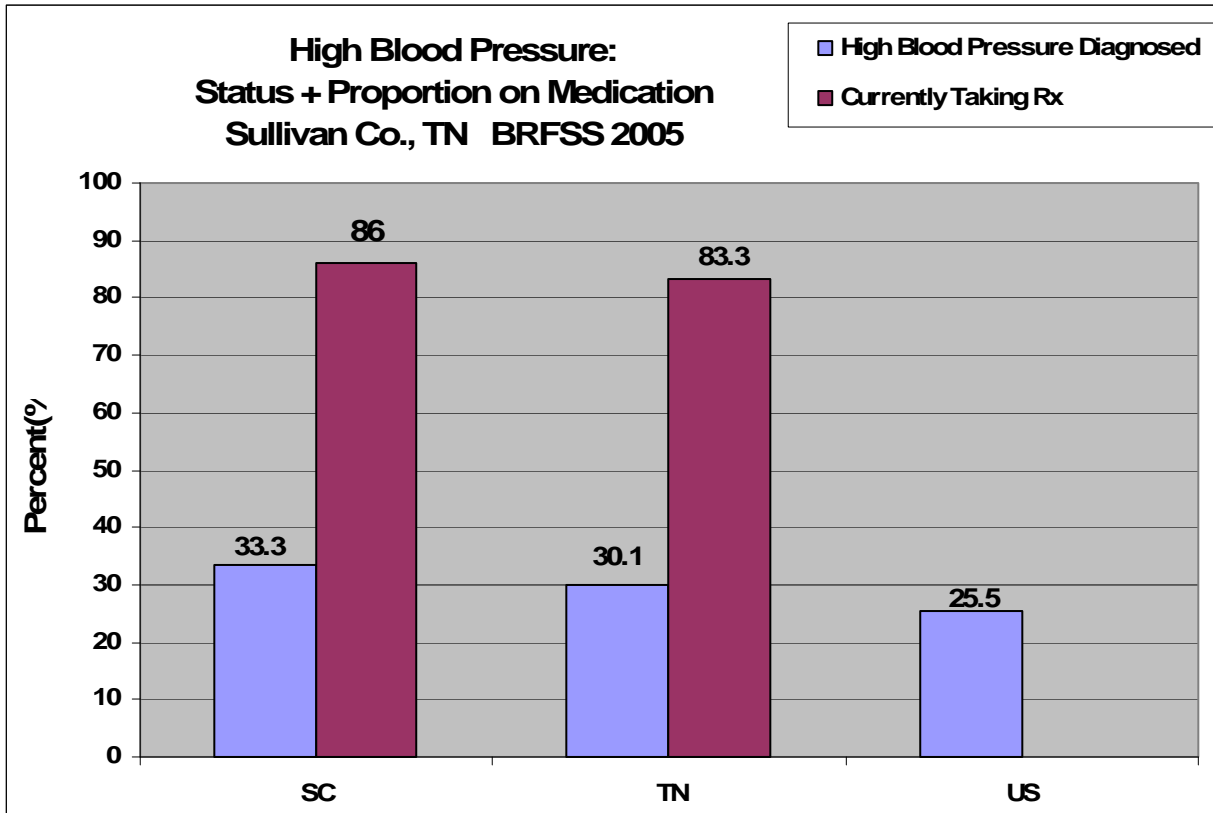
Similar to other counties in Northeast TN, the rates of Chlamydia infection have steadily risen over the years from 1997 to 2006 in Sullivan County -- reaching an all-time high of 260 per 100,000 in 2006. This represents a 200% increase from the rate in 1997. However, 2007 data show an encouraging reduction in rates in Sullivan County. This indicates a possible downward trend – bringing Sullivan County Chlamydia rates closer to surrounding Northeast TN counties. Rate increases across the country may reflect changes in sexual behaviors and/or better diagnostic tools and methods leading to more diagnoses and reporting of cases.

Gonorrhea Rates Reported US, TN, Sullivan Co. & NE Region (1997-2007)

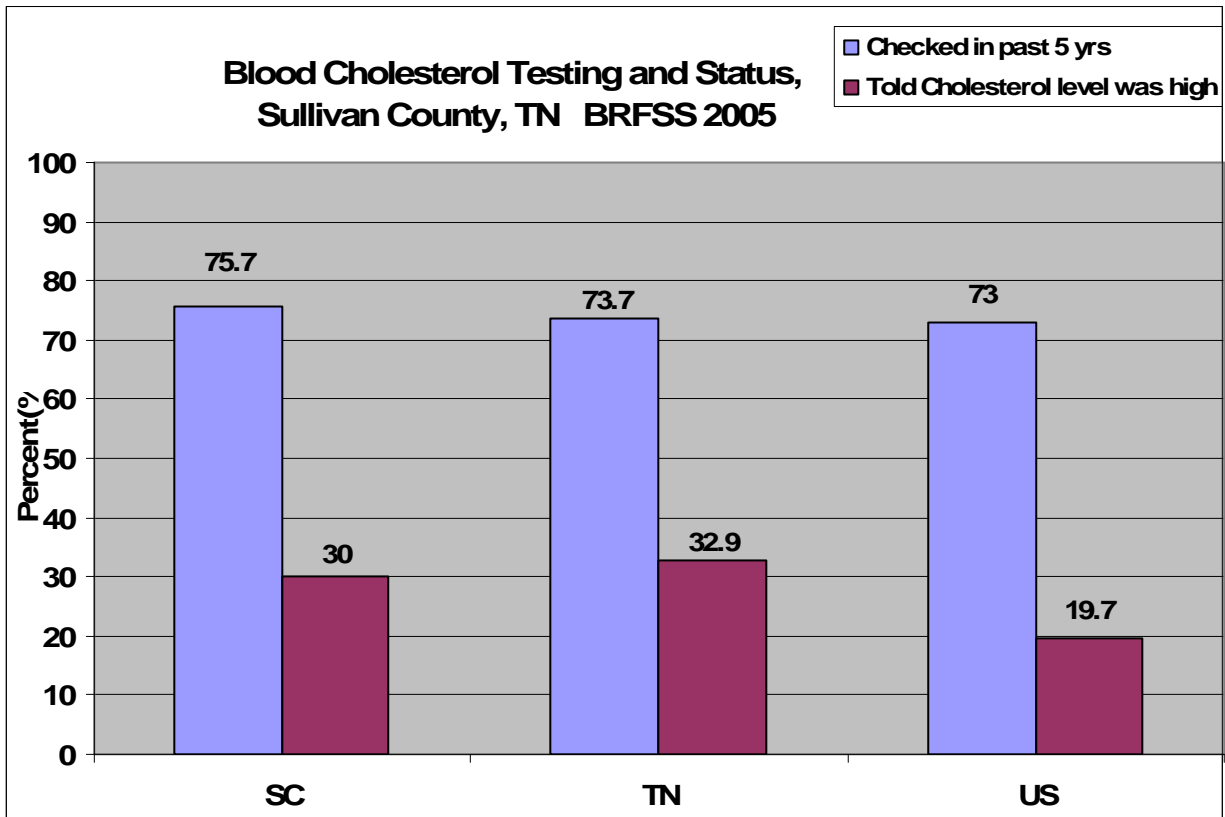


Similar to other counties in Northeast TN, the rates of Gonorrhea infections have steadily risen over the years from 1997 to 2006 in Sullivan County -- reaching an all-time high of 94 per 100,000 in 2005. This represents a 361% increase from the rate in 1997. However, 2006 and 2007 data show an encouraging reduction in Gonorrhea rates in Sullivan County. This indicates a possible downward trend -- bringing Sullivan County Gonorrhea rates closer to surrounding Northeast TN counties. Rate increases across the country may reflect changes in sexual behaviors and/or better diagnostic tools and methods leading to more diagnoses and reporting of cases.

Two other behavioral risk factor results not included in the Health Rankings Report



High blood pressure is a well-known risk factor for heart disease and stroke. Healthy People 2010's target for this objective is to reduce the proportion of adults with high blood pressure to 16%. Thirty-three percent of SC's respondents reported having high Blood Pressure. TN's prevalence was 30.1% and the US was 25.5%. Eighty-six percent of respondents who had high blood pressure reported taking medication to control their blood pressure.



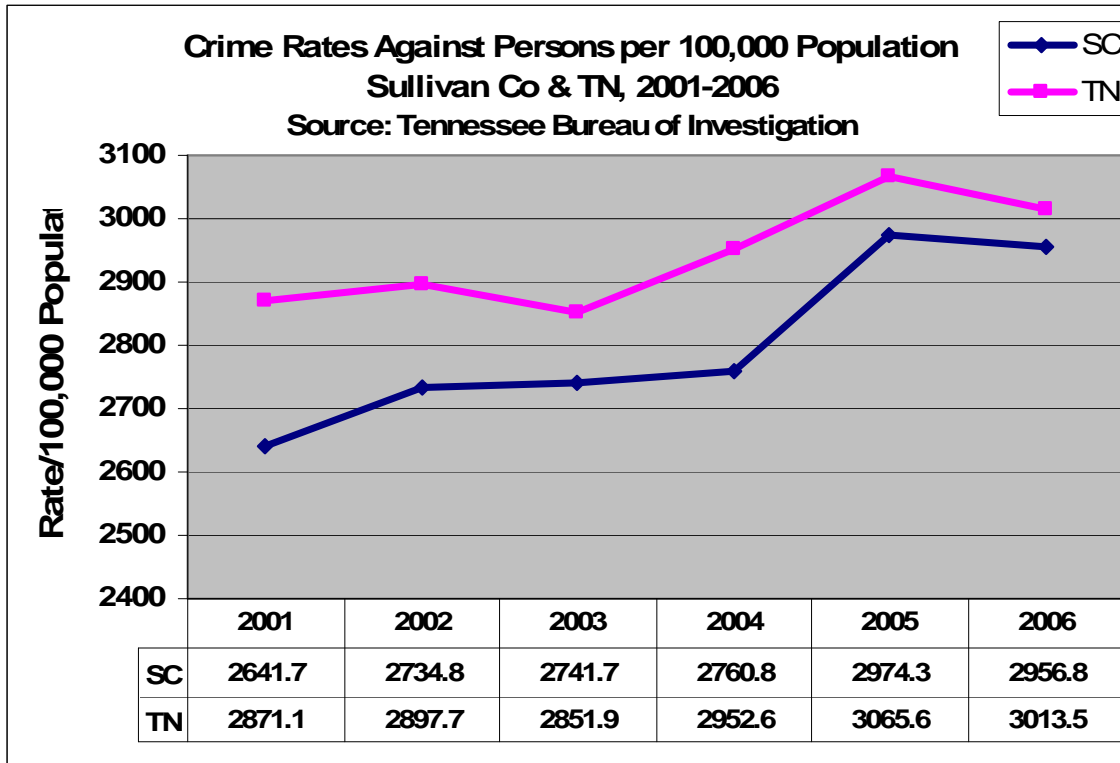
Research shows that lowering blood cholesterol significantly reduces the risk for heart attacks and heart attack deaths. The National Cholesterol Education Program that was created in 1985 has been very effective in increasing the numbers of people who have their blood cholesterol checked. Survey respondents were asked whether they had had their cholesterol checked within the past 5 years. Three-quarters of the respondents reported that they had; responses were consistent in TN and the US. The Healthy People 2010 target for this objective is to screen 85% of the adult population. Respondents who had had their cholesterol checked were asked whether it was high. Roughly 30% said it was in both Sullivan County and TN which is over 50% higher than the US response – only 20% of Americans reported having high cholesterol.

CRIMES AGAINST PERSONS

Trends

Overall, crime rates against persons have maintained a stable trend over the years from 2001 to 2006, with a gradual increase of about 12% through those years. The most significant increase in the rates was from the year 2004 to 2005, where they increased by almost 8%.

If not a true increase, this can probably be attributed to an increase in patrolling and reporting of offenses.



Vs. Other Crimes in SC

Crime rates against persons are significantly lower than those against property in Sullivan County. But this cannot undermine the importance of the need for measures to bring the rates lower, since the magnitude of crimes against persons and its impact on lives of the people is far greater than any other crime.

Probably at some level, crimes against persons are related to components of crimes against society (for e.g. Drug/Narcotic violations, etc) as both the crimes against persons and against society follow the same time trends.

Vs. Total All Crimes in SC

Crimes against persons contribute from about 25-30% to the total crimes in Sullivan County, and have maintained that ratio over the years from 2001 to 2006.

Vs. Statewide Trends

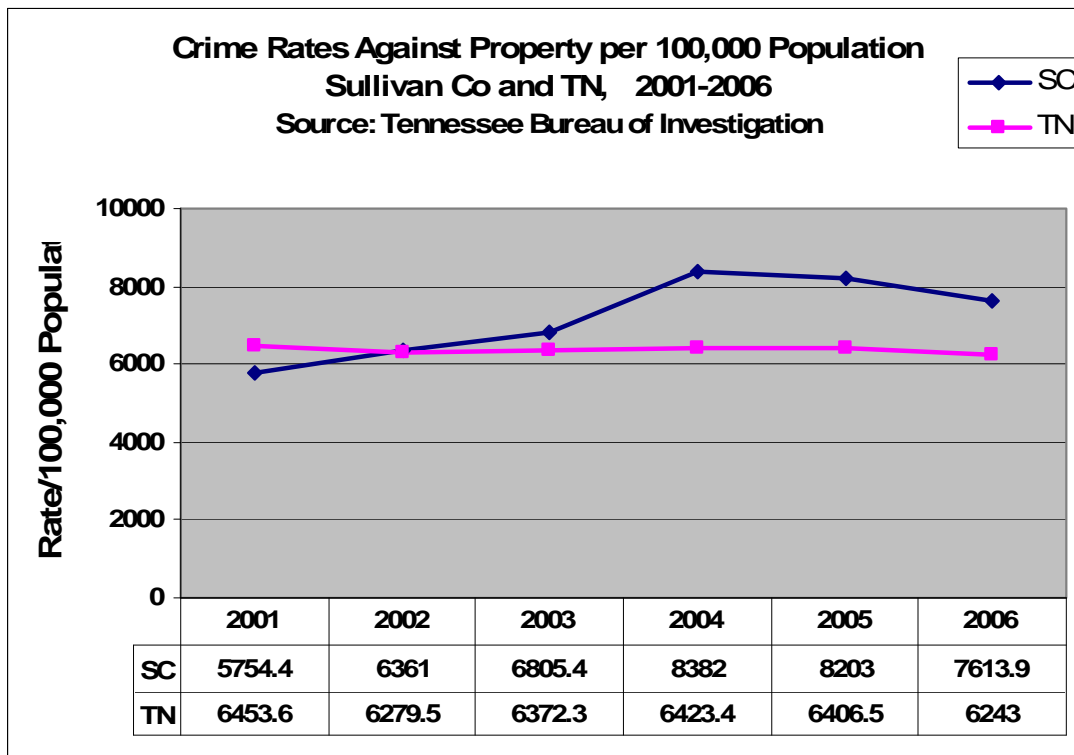
Crimes against persons follow the same overall trend as that for the state of TN, but the rates are significantly lower in Sullivan County than in TN.

In SC, the rates increased by 12% over the years from 2001 to 2006, whereas in TN, they increased by 5% over the same period of time. Rates in SC appear to be catching up to the higher rates in TN.

CRIMES AGAINST PROPERTY

Trends

Overall, crimes against property, which includes arson, theft, etc., represents a problem of increasing magnitude. The rates of these crimes increased by almost 32% over the years from 2001 to 2006, with the greatest increase from 2003 to 2004 (about 23% increase), bringing the rates for 2004 to the highest in the period.



Vs. Other Crimes in Sullivan County

Compared to other crimes, crimes against property have the highest rates, and are the major predictor for the trend of totals all crimes in Sullivan County, which also show a sharp increase from 2003 to 2004.

Vs. Total All Crimes

Crimes against property contribute to about 60% of the total all crimes in Sullivan County.

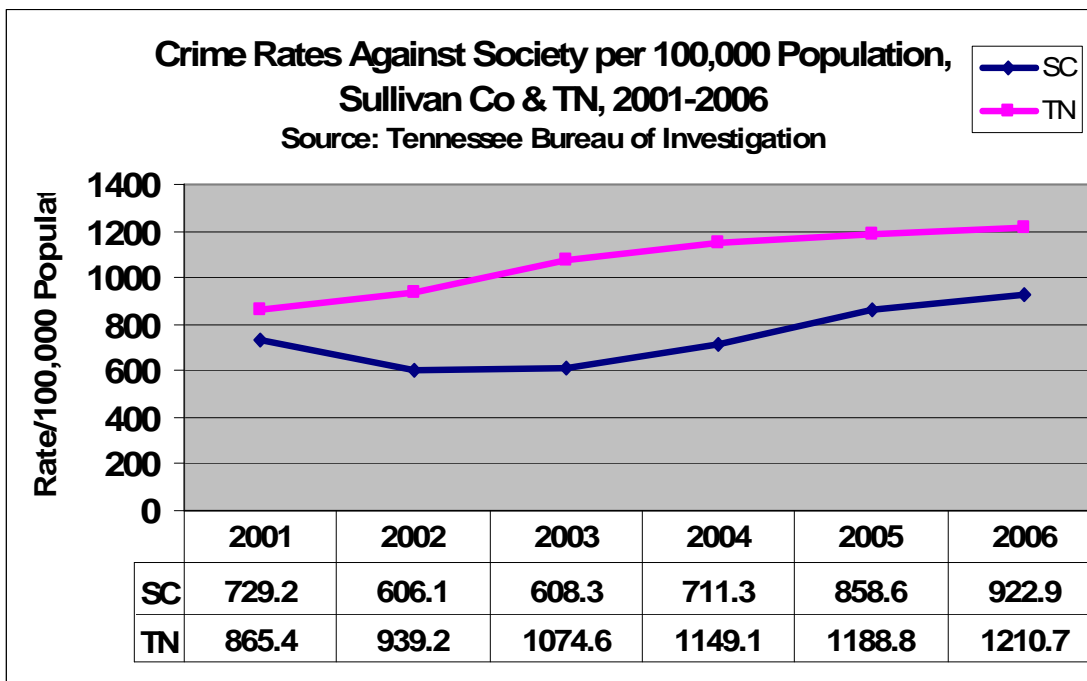
Vs. Statewide Trends

Contrary to the statewide trend in crimes against property, which have remained stable over the years from 2001 to 2006 with in fact a marginal reduction by 3%, the trends in Sullivan County have increased by 32%.

CRIMES AGAINST SOCIETY

Trends

Following an initial decline in 2002 and 2003, crimes against society have continued to rise steadily with an overall increase by about 27% from 2001 to 2006.



Vs. Other Crimes in Sullivan County

Similar to other crimes, crimes against society also show an increase in the rates through the years, but it more closely follows crimes against persons, with both categories having a continued increase.

Vs. Total All Crimes

Crimes against society represent less than 10% of the total crimes in Sullivan County.

Vs. Statewide Trends

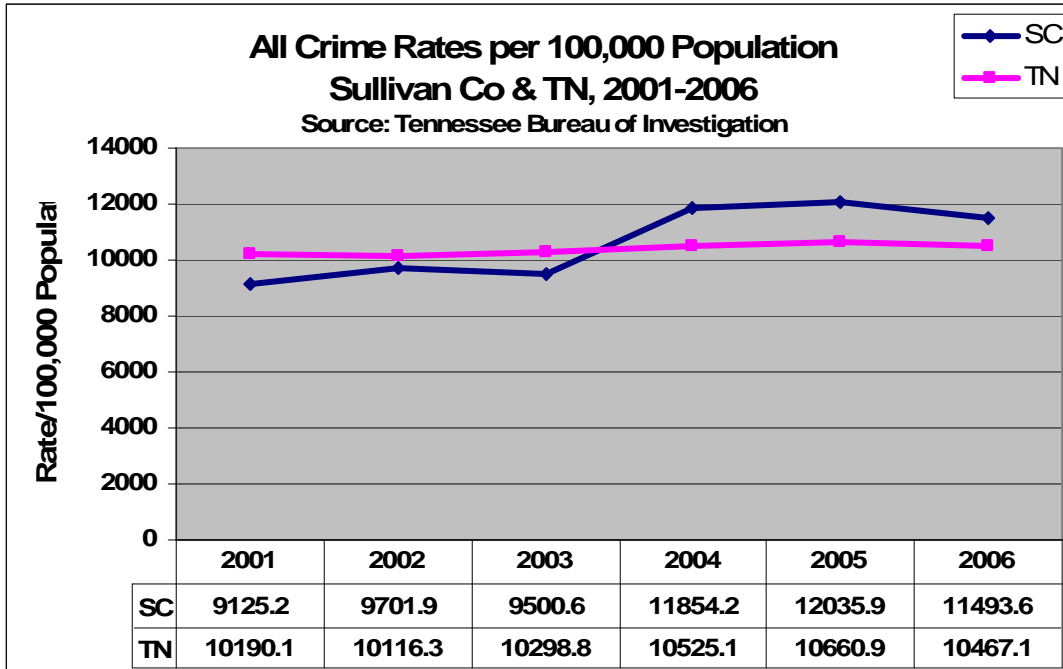
When comparing with statewide trends in TN, Sullivan County fares better in at least 3 areas:

- Rates: which are quite lower (by at least 20-30%) in SC than in TN
- % Increase from 2001-2006: which is about 27% for SC, whereas for TN it is almost 50% increase.
- Contribution to total crimes: less than 10% in SC, but little over 10% in TN.

TOTAL ALL CRIMES

Trends

As with other individual crime rates, these rates have also increased significantly by about 26% over the years from 2001 to 2006. The most dramatic increase was from 2003 to 2004, showing an increase of almost 25%, and bringing the rates to their peak values in 2004 and 2005.



Vs. Other Crimes in Sullivan County

Since crimes against property contributes to about 60% of the total crimes in Sullivan County, the trend in total all crimes closely follows that of crimes against property.

Vs. Statewide Trends

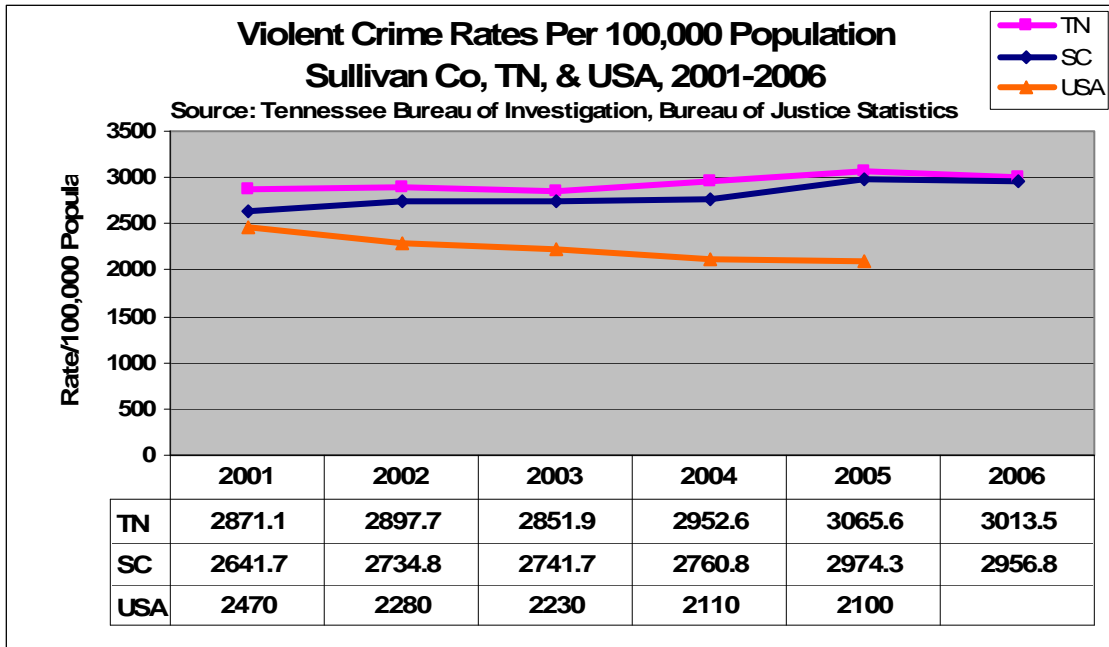
While the all crimes rate has remained more or less stable at a little over 10,000/100,000 population in the state of TN, the rates have jumped by almost 26% in Sullivan County, from being about 10% lesser than TN in 2001 to being about 10% more than TN in 2006, with the period of greatest increase from 2003 to 2004.

VIOLENT CRIME RATES STATEWIDE & NATIONAL COMPARISON

Sullivan County has not fared as well as the state and nation in regards to violent crime statistics.

While the absolute rates are higher for TN than for Sullivan County, the increase over the years has been about 5%, compared to 12% for Sullivan County, making the rates in Sullivan County to be almost equal to those of TN.

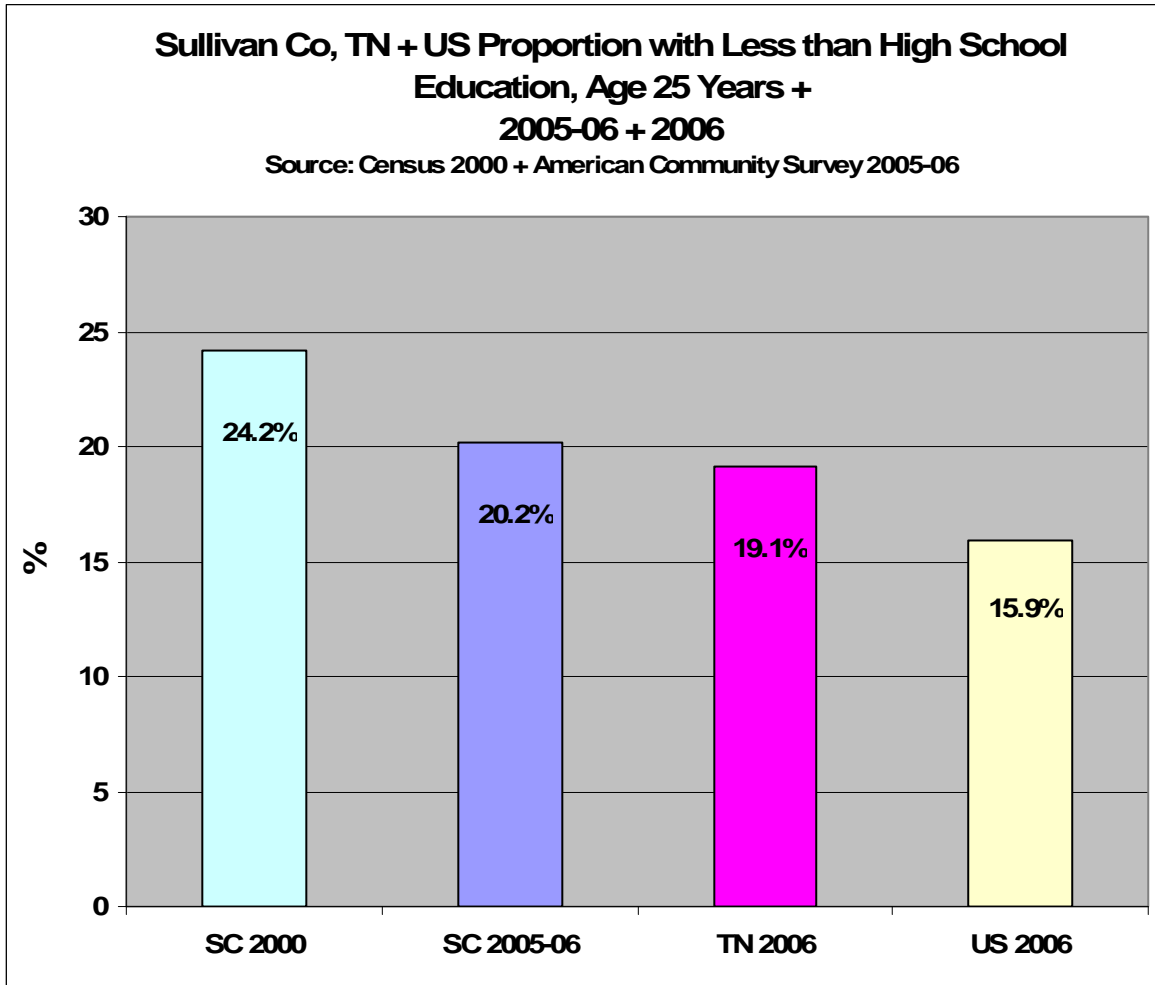
National there has been a decline of about 15% over the same period.



Motor vehicle crash deaths (per 100,000) – see deaths and hospitalizations

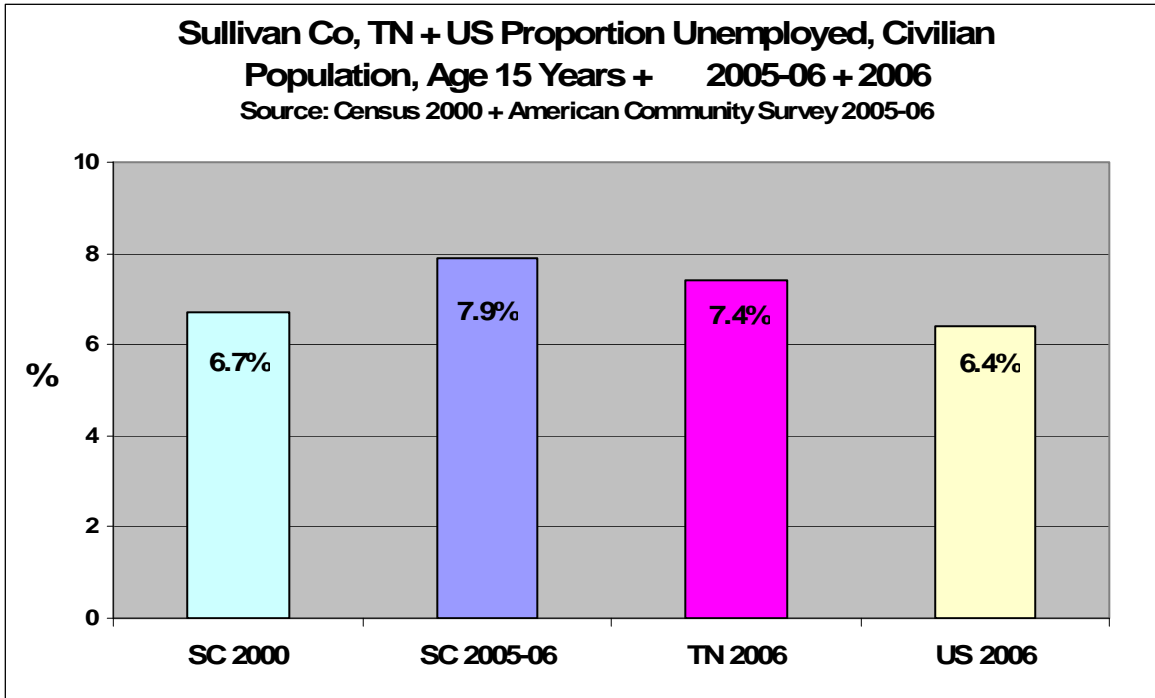
SOCIOECONOMIC FACTORS

High School graduation rate (%)



Many studies demonstrate a correlation between higher education and improved health outcomes. Every one of the top causes of death and hospitalization has education as precursor, either directly or indirectly. Almost a quarter of Sullivan County’s population did not complete high school in 2000 but there was almost a 17% improvement in this proportion in 2005-2006. Still, the proportion seeking high school completion is 27% less than the national trend.

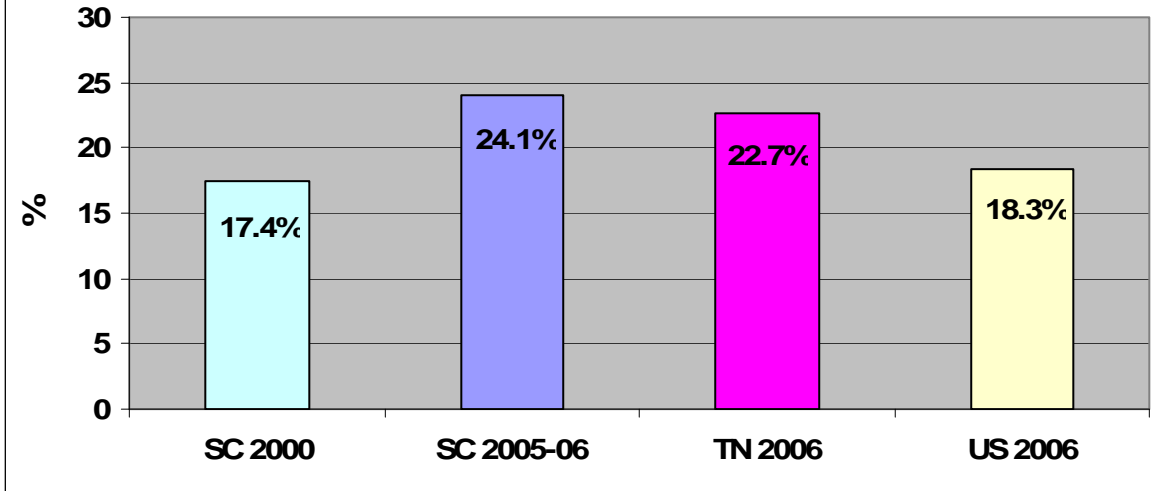
Level of education (%) – Forthcoming in the SC Health Profile



Similar to completion of high school, being employed is positively associated with good health. The proportion of unemployed grew from 5.6% to 7.9% in 5-6 years. This could prove to be an important precursor to residents of Sullivan County's future health status.

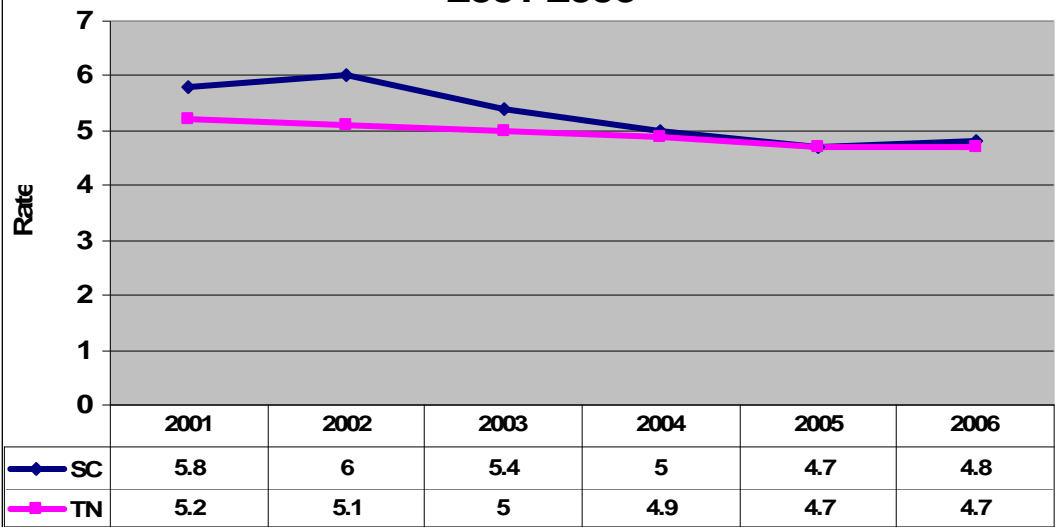
**Sullivan Co, TN + US Proportion of Children Under 18 Years
Old with a Family Income Below the Poverty Level
2005-06 + 2006**

Source: Census 2000 + American Community Survey 2005-06



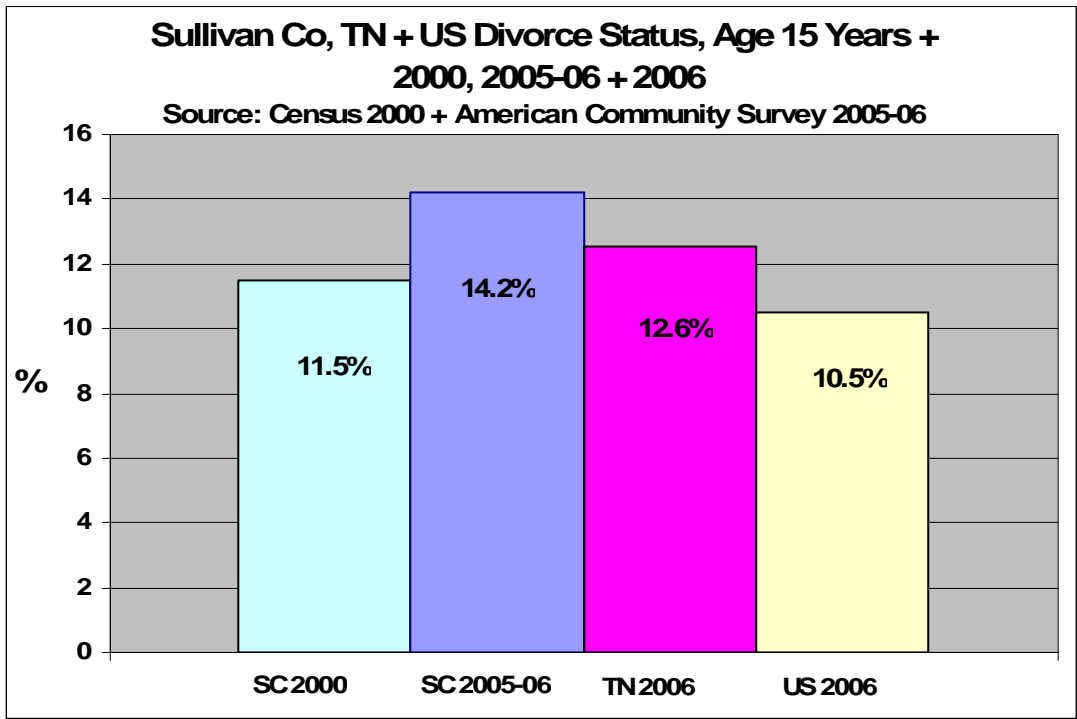
Children who grow up in families dealing with poverty often have increased behavioral problems which follow them throughout their lives. The proportion of disadvantaged children has increased from 17.4% in 2000 to 24.1% in 2005-06. There are more families living in poverty in Sullivan County (6%) than in Tennessee and the US (31.7%). This is an important predictor of future health status.

**Yearly Divorce Rates per 1,000
Sullivan Co. + Tennessee
2001-2006**

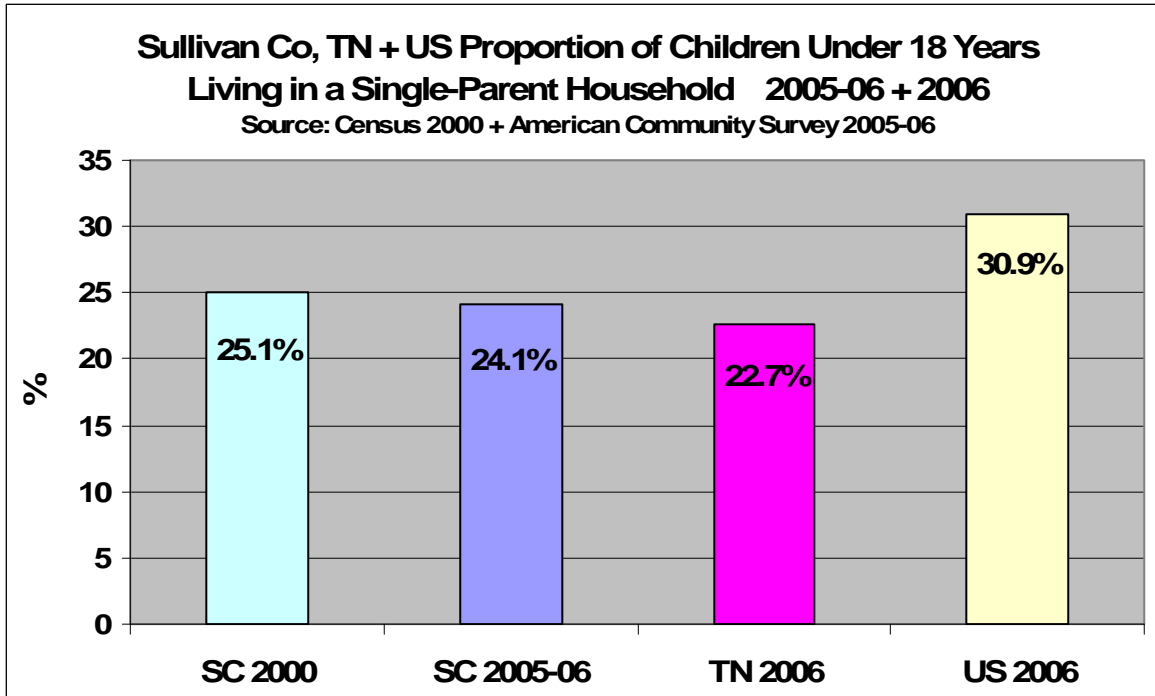


Source: Tennessee Department of Health, Office of Policy, Planning and Assessment, Division of Health Statistics.

Divorce can impact the mental and social health of every family member as well as the cohesiveness of a society's social structure. Well-known health outcomes associated with these events are anxiety, depression and alcohol and drug abuse. Rates of divorce dropped from 5.8 per 1,000 population to 4.8 per 1,000 – a 17% decrease.



The proportion of people reporting their current marital status as being divorced has grown from 11.5% in 2000 to 14.2% in 2005-2006. This represents a 23.5% increase. The proportion is 12.7% greater than the percentage in TN and 35.2% in the US.



Single parents who raise children on their own are at increased risk for stress as they are disadvantaged in terms of competing in the workforce while trying to raise their children. This family status is often associated with lower incomes and poverty, unemployment and health issues such as anxiety and depression. Twenty-five percent of families were in this category in Sullivan County in 2000 and there was just a slight drop in 2005-06. This proportion is slightly higher than that of TN and 22% below the national trend.

PHYSICAL ENVIRONMENT

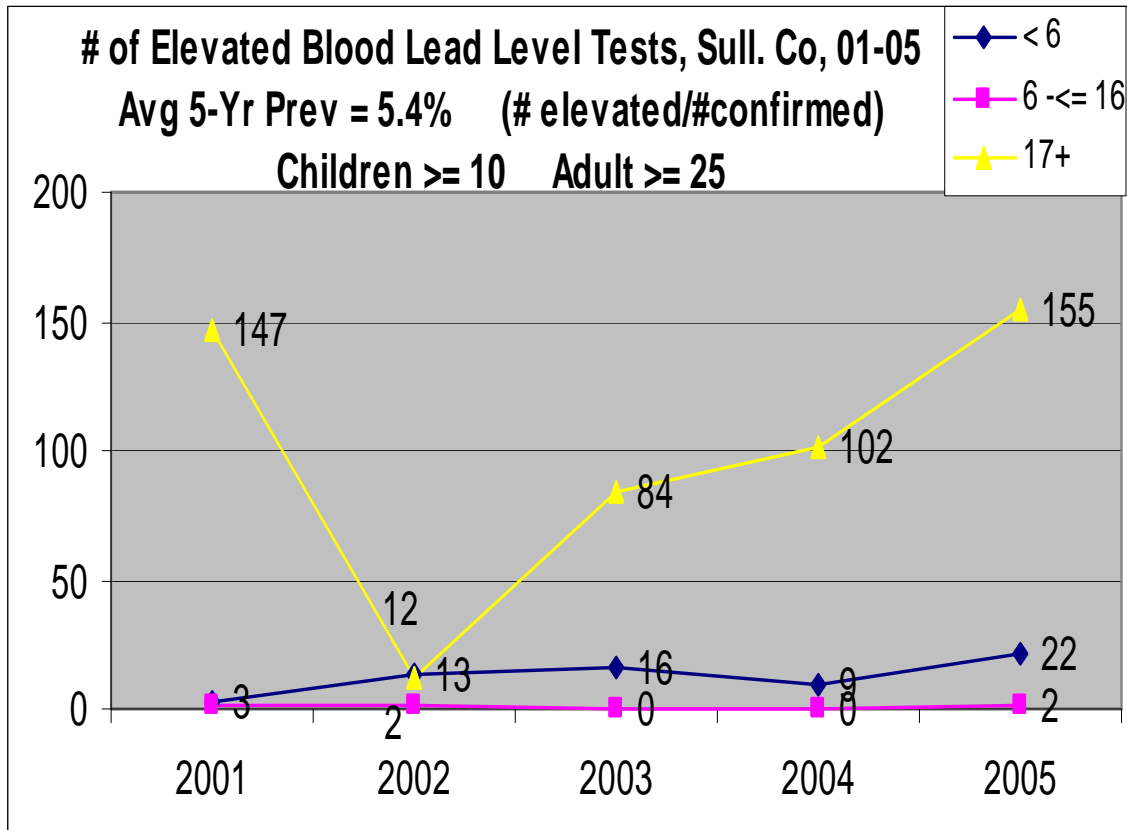
The following data will be reported in the future SC Health Profile:

- Air quality cancer risk
- Air quality hazard index
- Fine particle matter in air
- Ozone level
- Nitrate level in water > 2

Housing built before 1950

Houses built before 1978 and 1950 pose a higher risk of lead poisoning for child inhabitants. Sullivan County has a fairly high proportion of older homes: according to the Census 2000, there are 33,547 homes built before 1978 (lead paint) and 13,415 homes built before 1950 (lead pipes).

Lead poisoned children (%)



Children are especially sensitive to lead poisoning at minute levels: well-established effects include learning disabilities, ADD, stunted growth and affected speech. Because children are still in early development, these effects from exposure to lead can be permanent. For Sullivan County children, there was a 7-fold increase in the number of elevations between the years 2001-2005. The prevalence of elevations among those children who had confirmed tests jumped from 1.9% to 7.7%. This higher rate is both good and bad – bad because more children were lead poisoned but the program of targeted testing has been effective in identifying ‘at-risk’ children. Adult elevations rose steadily during this time period as well: between 2003-2005, the number of poisoned adults increased by 85%. More current data with analysis will be forthcoming in the SC Health Profile.