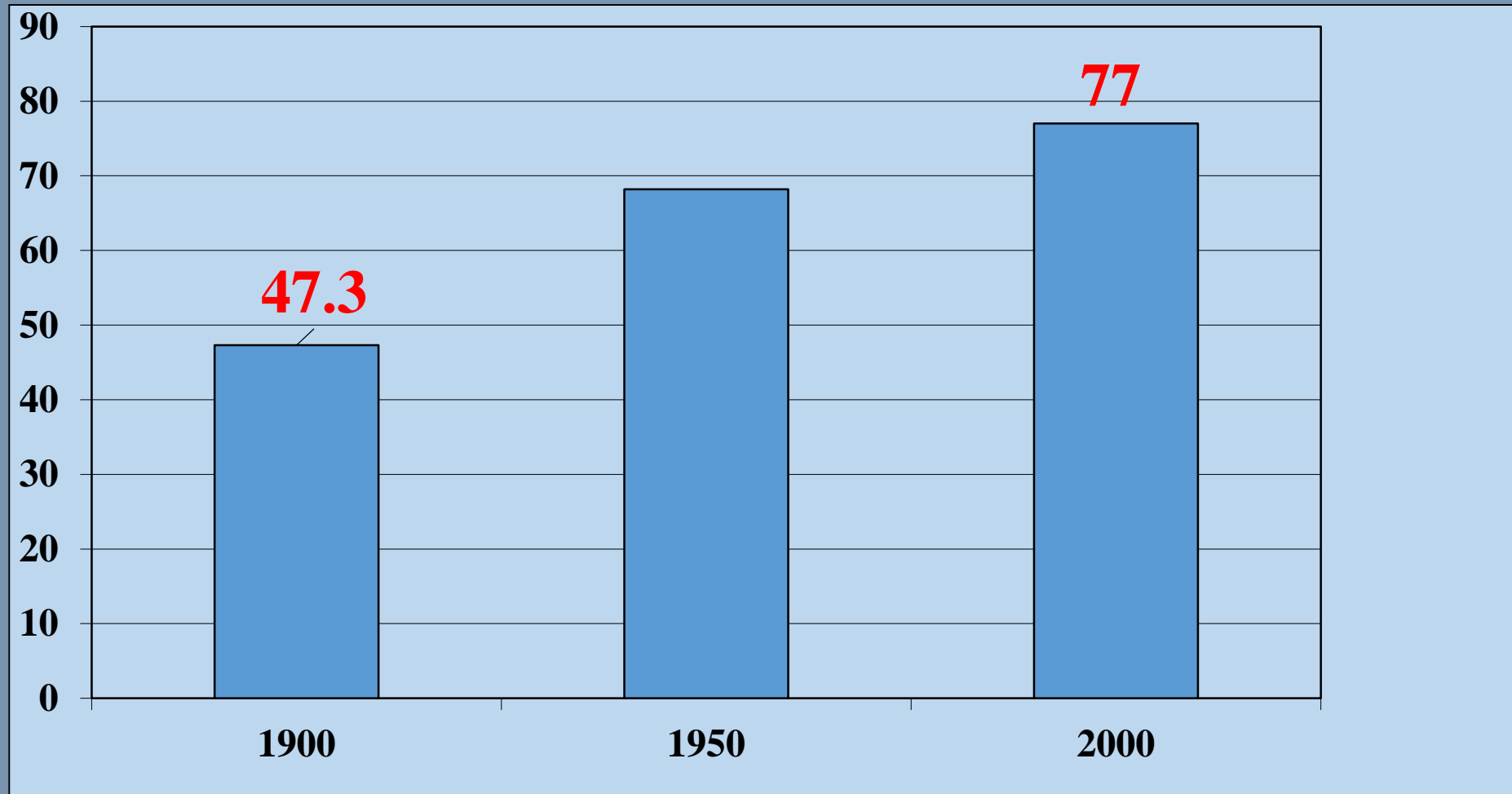




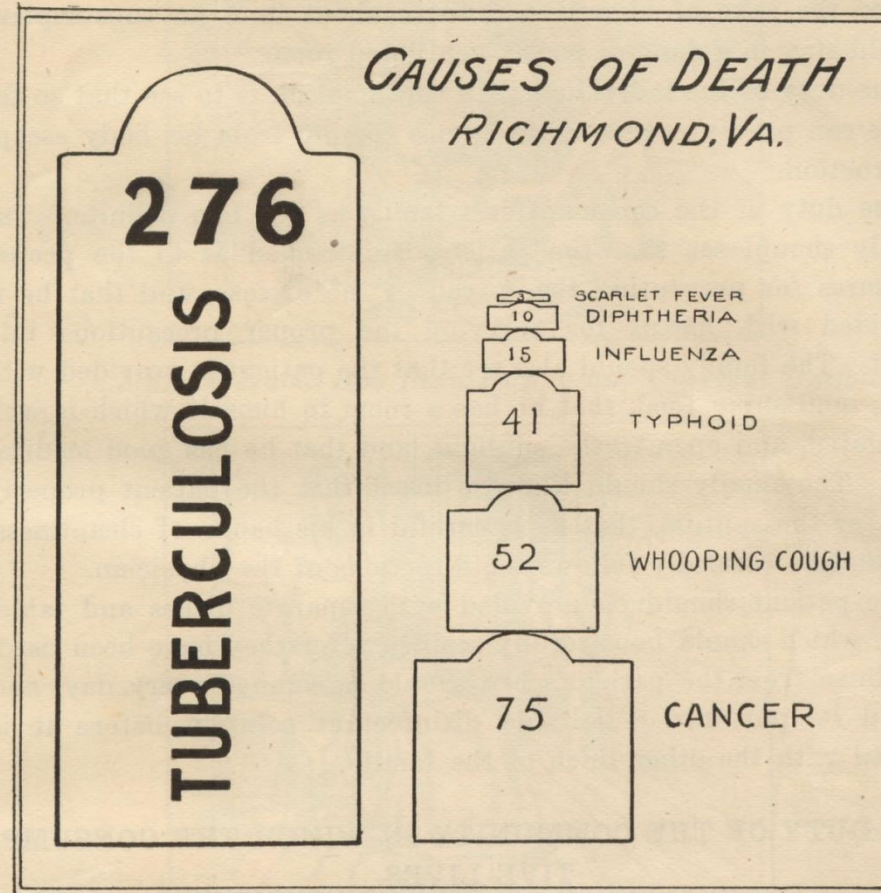
*Understanding and Improving Health:  
Lessons from Kentucky and America's "Poorest State"*

Randy Wykoff, MD, MPH & TM  
Dean, ETSU College of Public Health  
Director, Center for Rural Health Research  
September 18, 2019

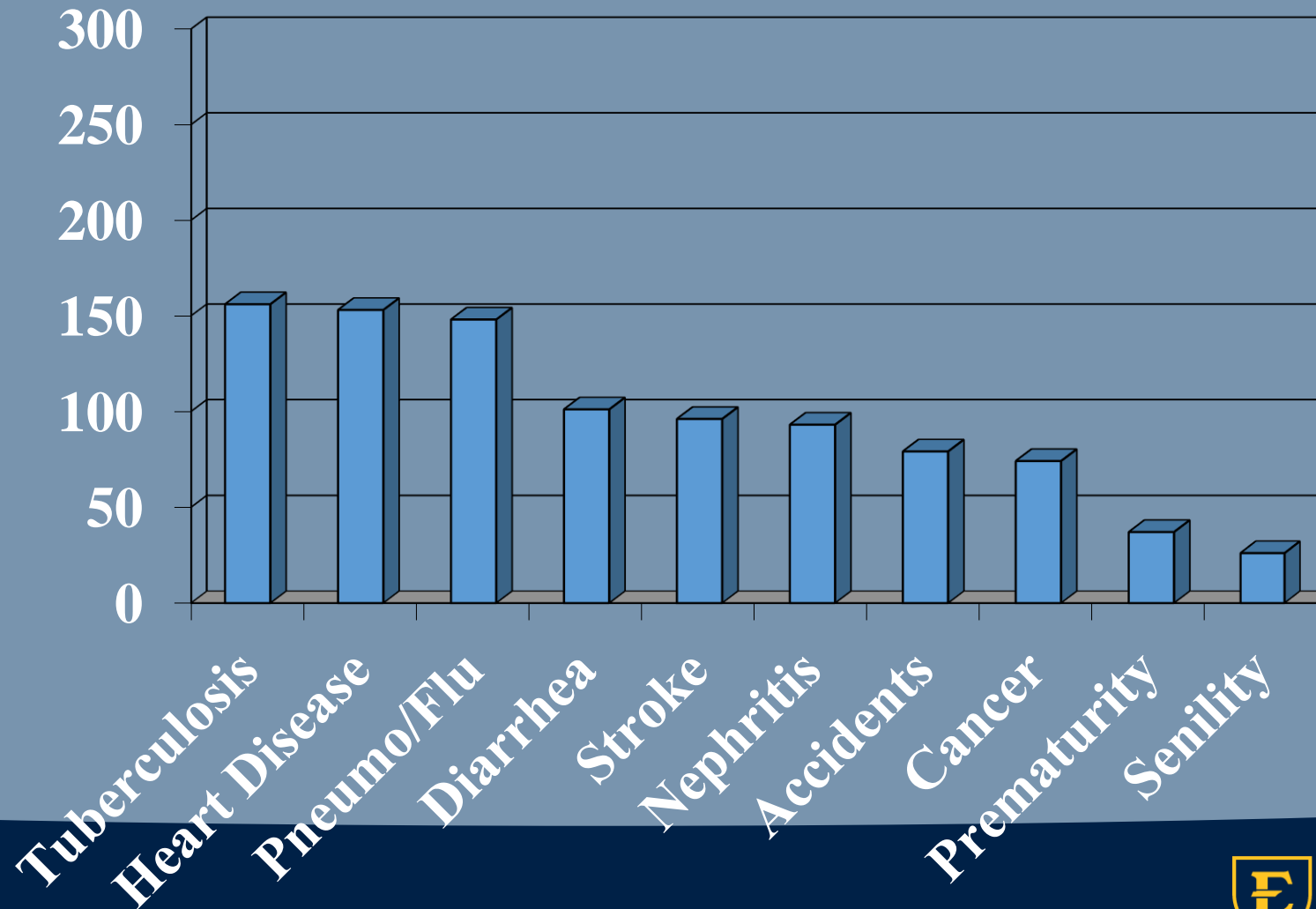
# *Life Expectancy Change in the 20<sup>th</sup> Century*



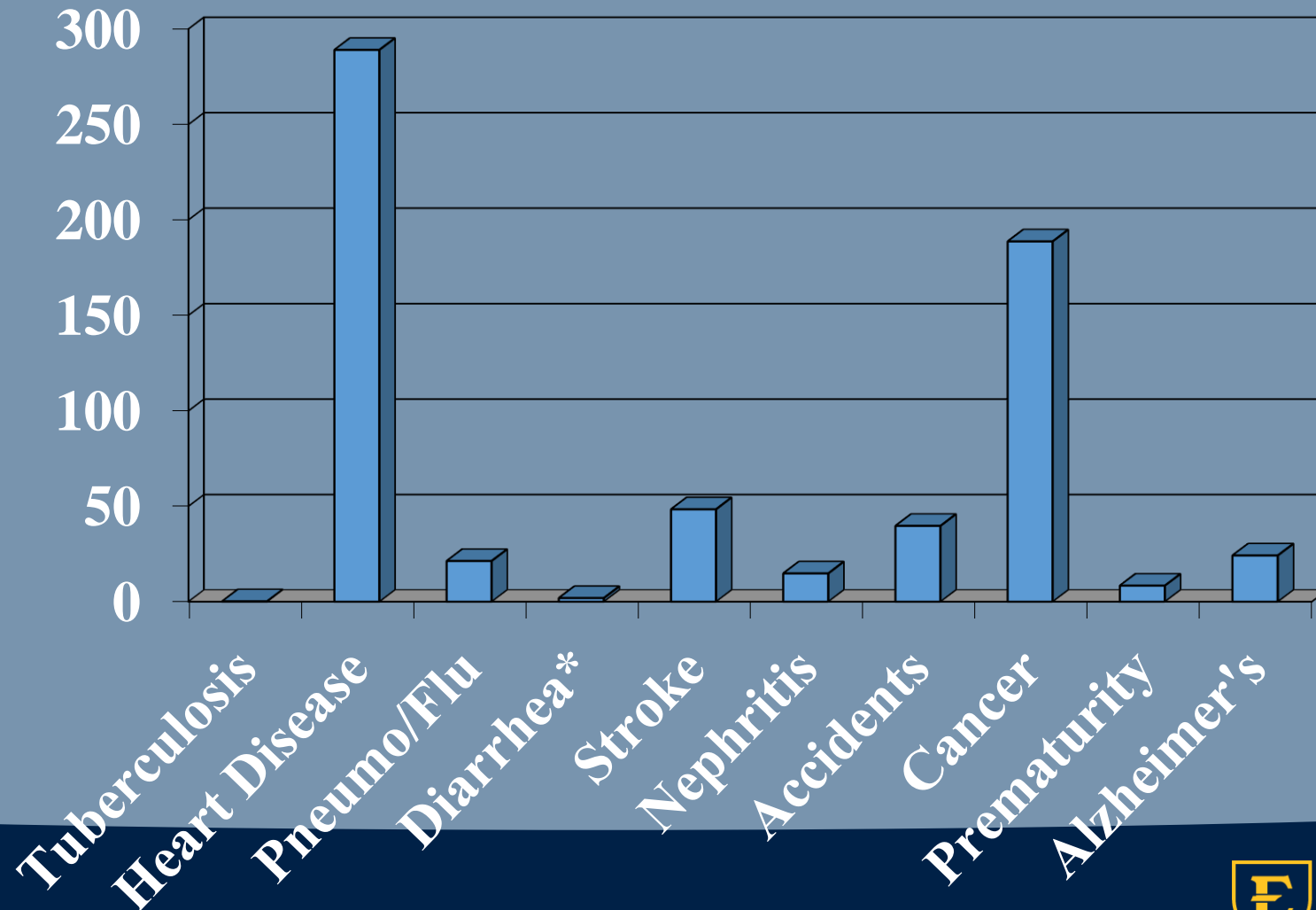
# The "Virginia Health Bulletin" 1908 and 1909



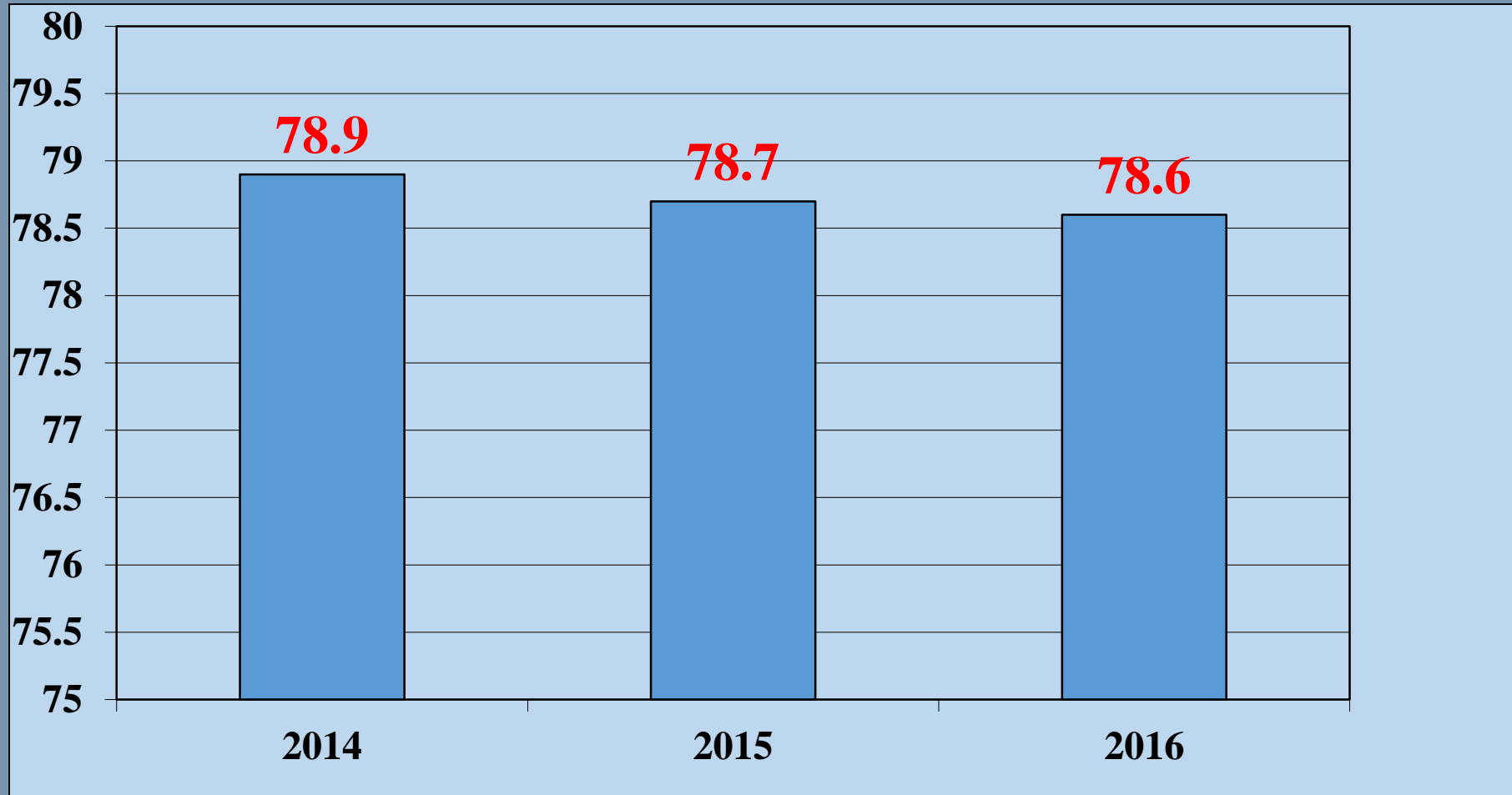
# Cause of Death—United States 1909



# *Cause of Death—United States 2005*



# *Life Expectancy Change in the 21st Century*



# *Life Expectancy*

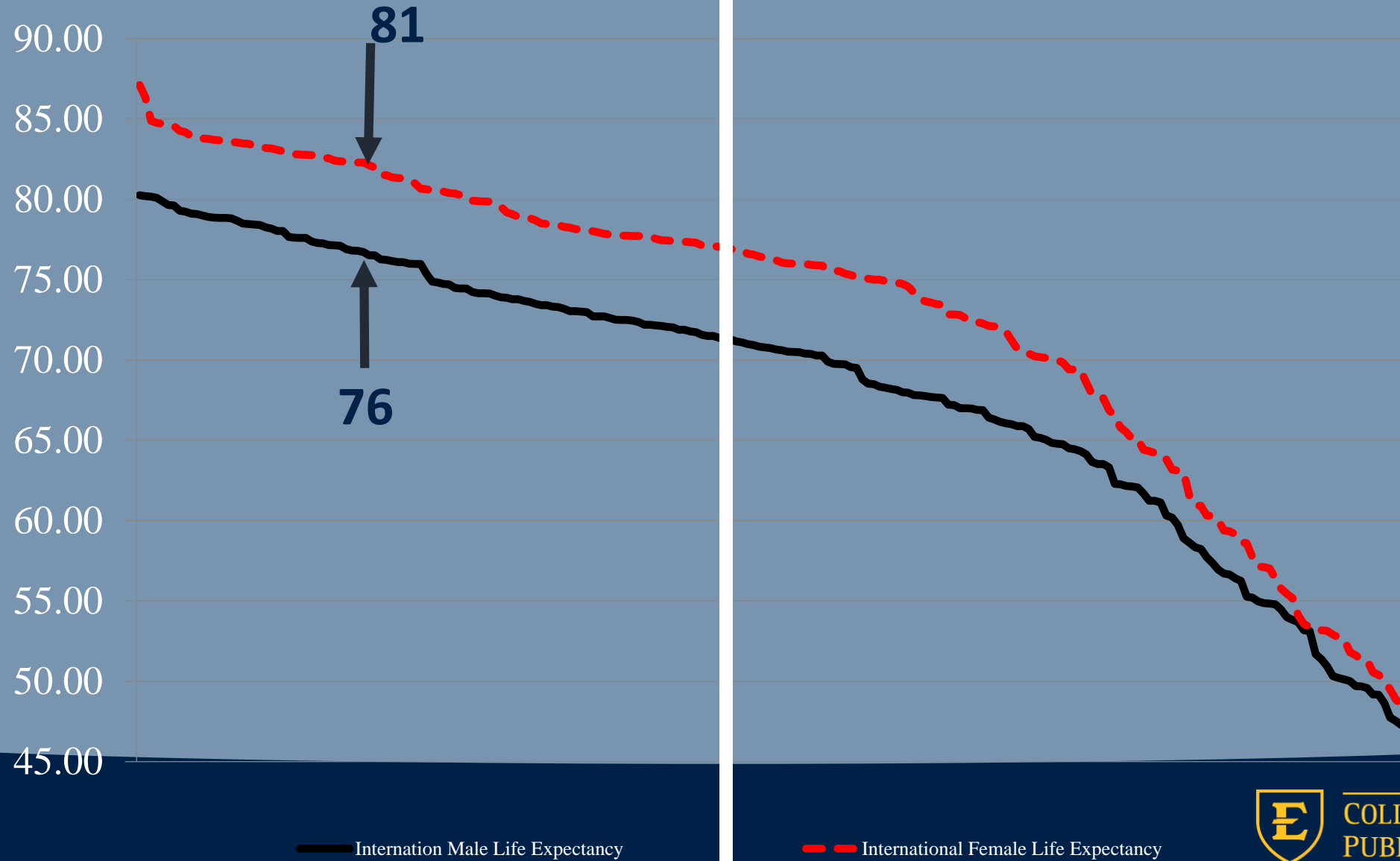
In 2019, for Life Expectancy  
the United States Ranks:

**39th**

Behind---

Monaco, Japan, Singapore, San Marino, Iceland, Andorra,  
Guernsey, Israel, Switzerland, South Korea, Australia, Italy,  
Luxembourg, Sweden, Canada, France, Jersey, Liechtenstein,  
Norway, Spain, Austria, Bermuda, Netherlands, Cayman  
Islands, Isle of Man, New Zealand, Belgium, Slovenia,  
Finland, Denmark, Ireland, Germany, Portugal, United  
Kingdom, Greece, Taiwan, Turks and Caicos

*Life Expectancy: All 222 Countries in the World: Male (black) and Female (red) with USA shown with Arrows*



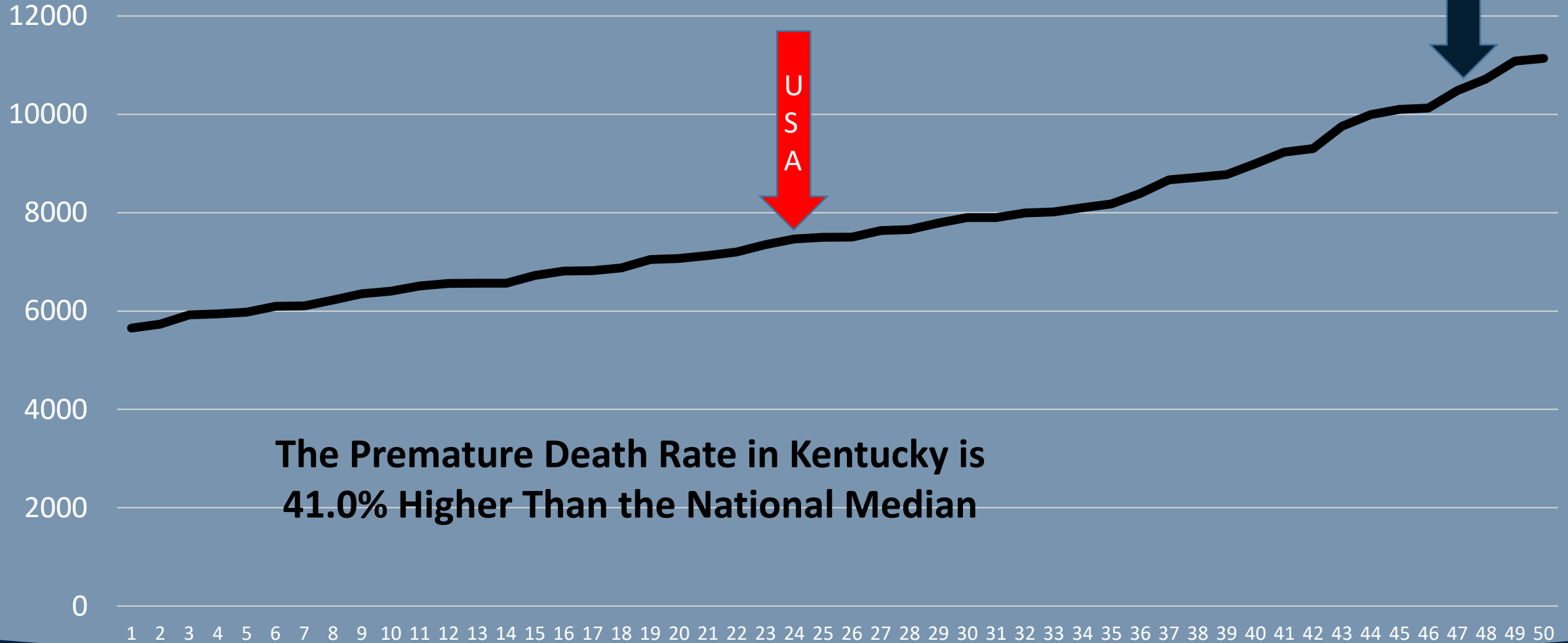


# Premature (Early) Death Rates (YPLL): United States 2018

1. Minnesota	5653	18 Virginia	6877	34 Michigan	8102
2. California	5734	19 North Dakota	7047	35 North Carolina	8177
3. Connecticut	5923	20 New Hampshire	7067	36 Georgia	8391
4. Washington	5942	21 Illinois	7127	37 Alaska	8666
5. New York	5978	22 Texas	7199	38 Missouri	8717
6. Massachusetts	6097	23 Kansas	7350	39 Indiana	8774
7. Hawaii	6104	<b>UNITED STATES</b>	<b>7432</b>	40 Ohio	8998
8. New Jersey	6225	24. Maine	7464	41 South Carolina	9232
9. Colorado	6352	25. South Dakota	7499	42 New Mexico	9301
10. Nebraska	6401	26. Arizona	7502	43 Tennessee	9756
11. Oregon	6511	27. Wyoming	7636	44 Oklahoma	9992
12. Rhode Island	6561	28. Maryland	7655	45 Arkansas	10,099
13. Vermont	6563	29. Florida	7790	46 Louisiana	10,125
14. Utah	6565	30. Nevada	7899	47 Kentucky	10,479
15. Idaho	6723	31. Montana	7900	48 Alabama	10,720
16. Iowa	6812	32. Delaware	7992	49 Mississippi	11,082
17. Wisconsin	6821	33. Pennsylvania	8013	50 West Virginia	11,136



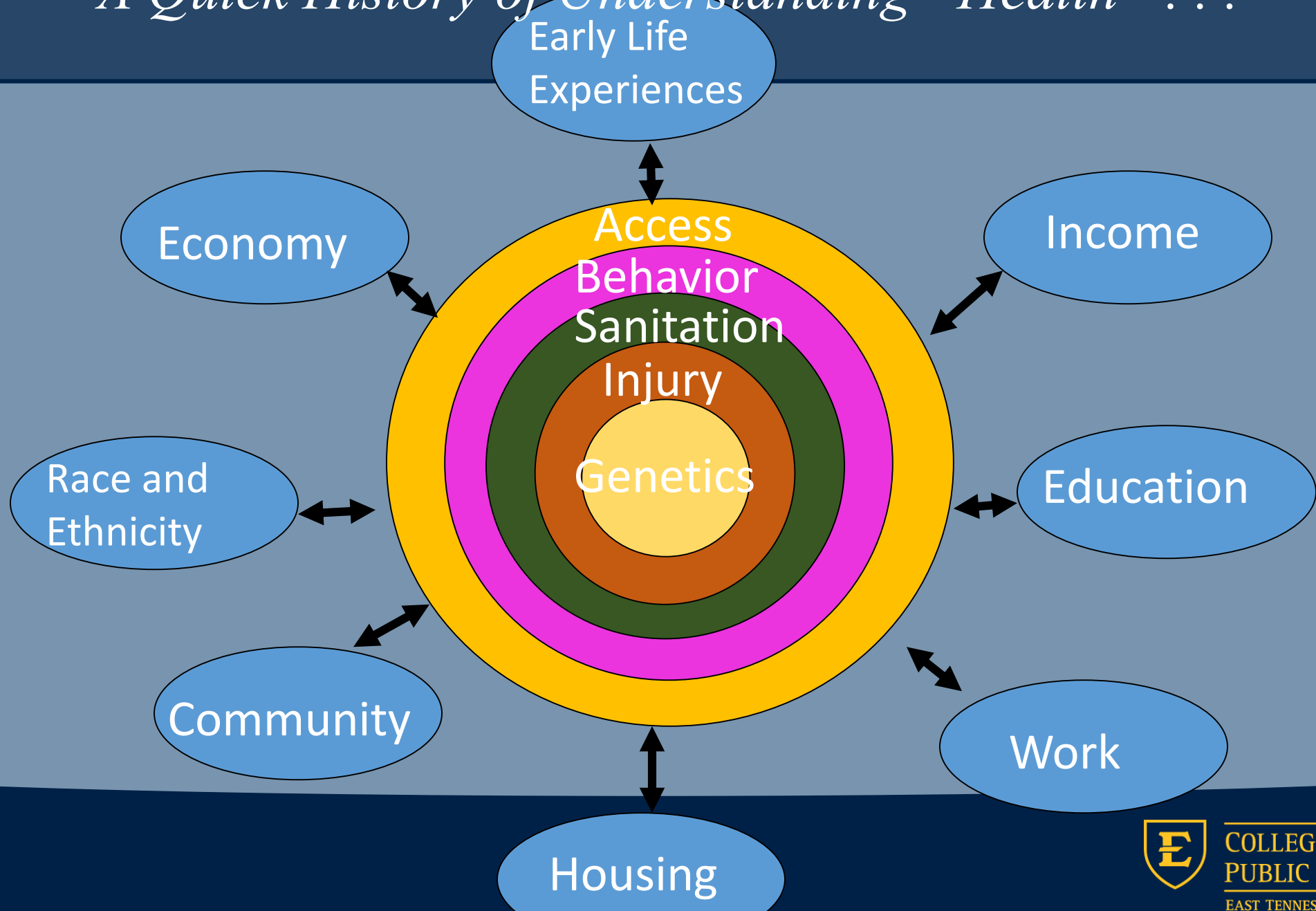
# Premature (Early) Death Rates: United States 2018



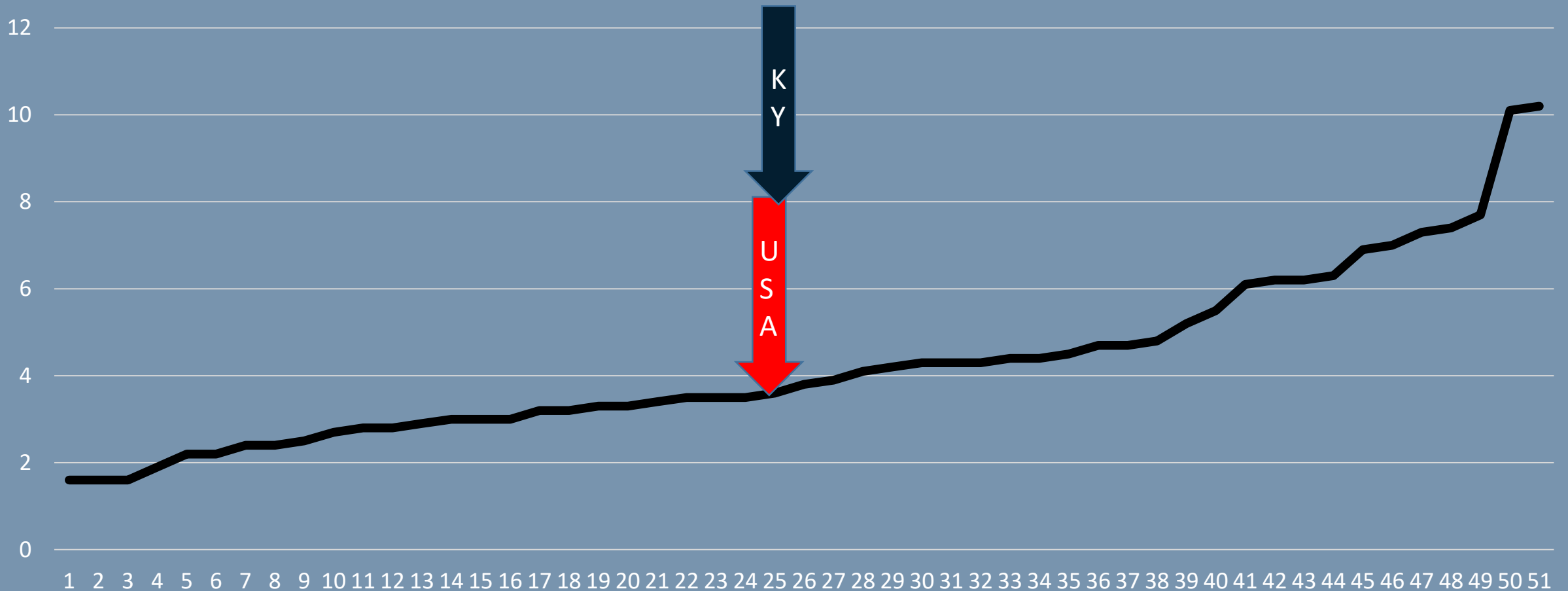
**The Premature Death Rate in Kentucky is  
41.0% Higher Than the National Median**



# *A Quick History of Understanding “Health” ...*

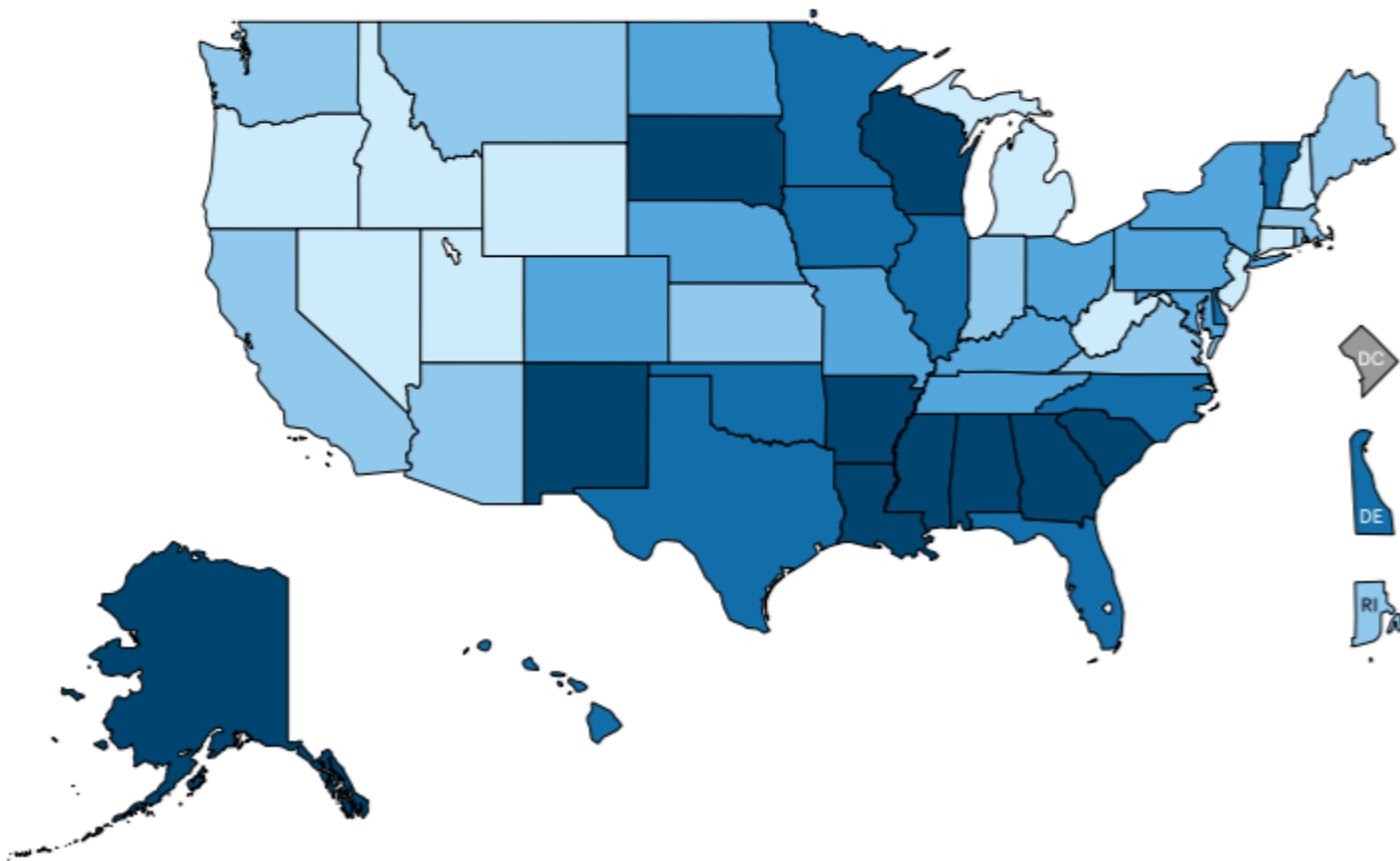
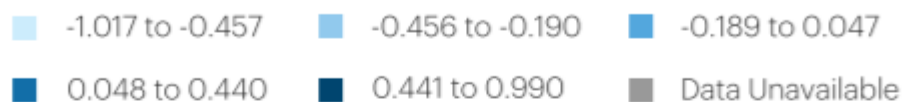


# Fatal Occupational Injuries: 2017



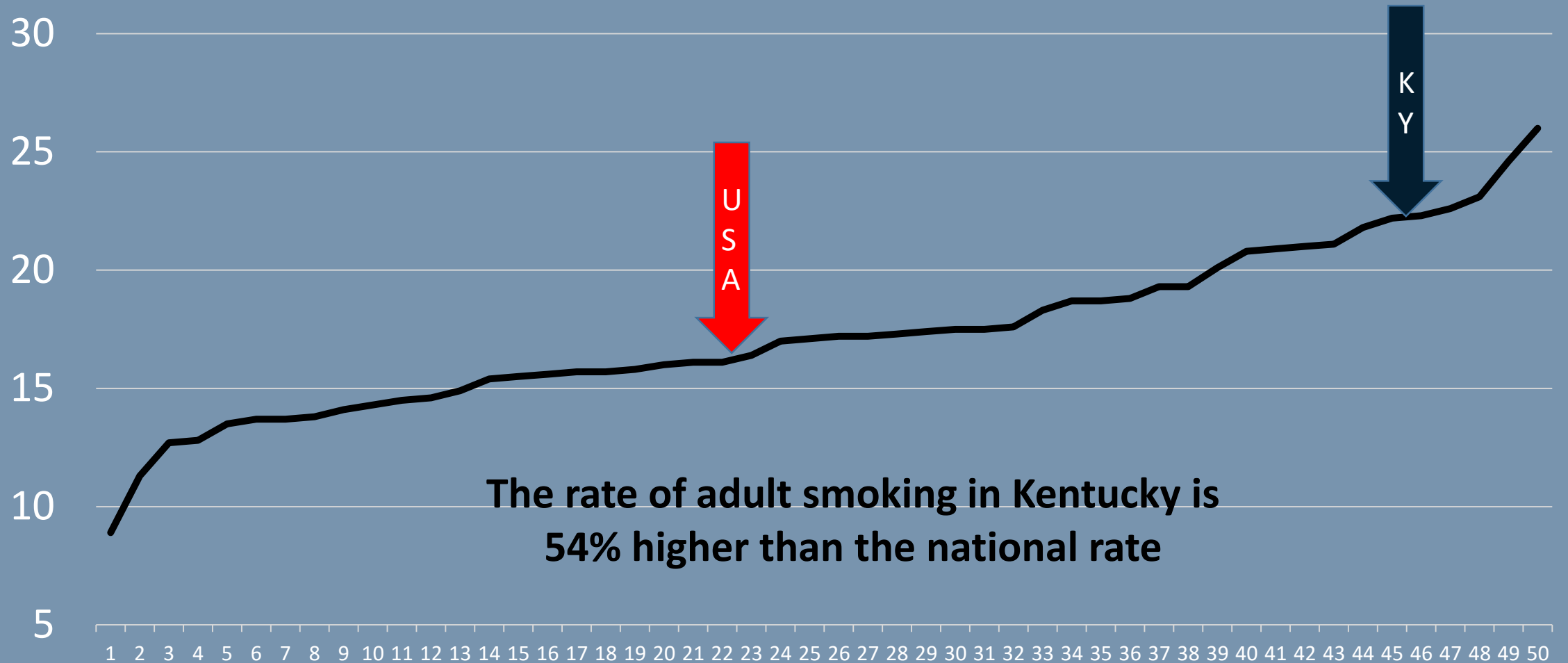
## Infectious Disease by State

Mean z score of the incidence of chlamydia, pertussis and *Salmonella* per 100,000 population

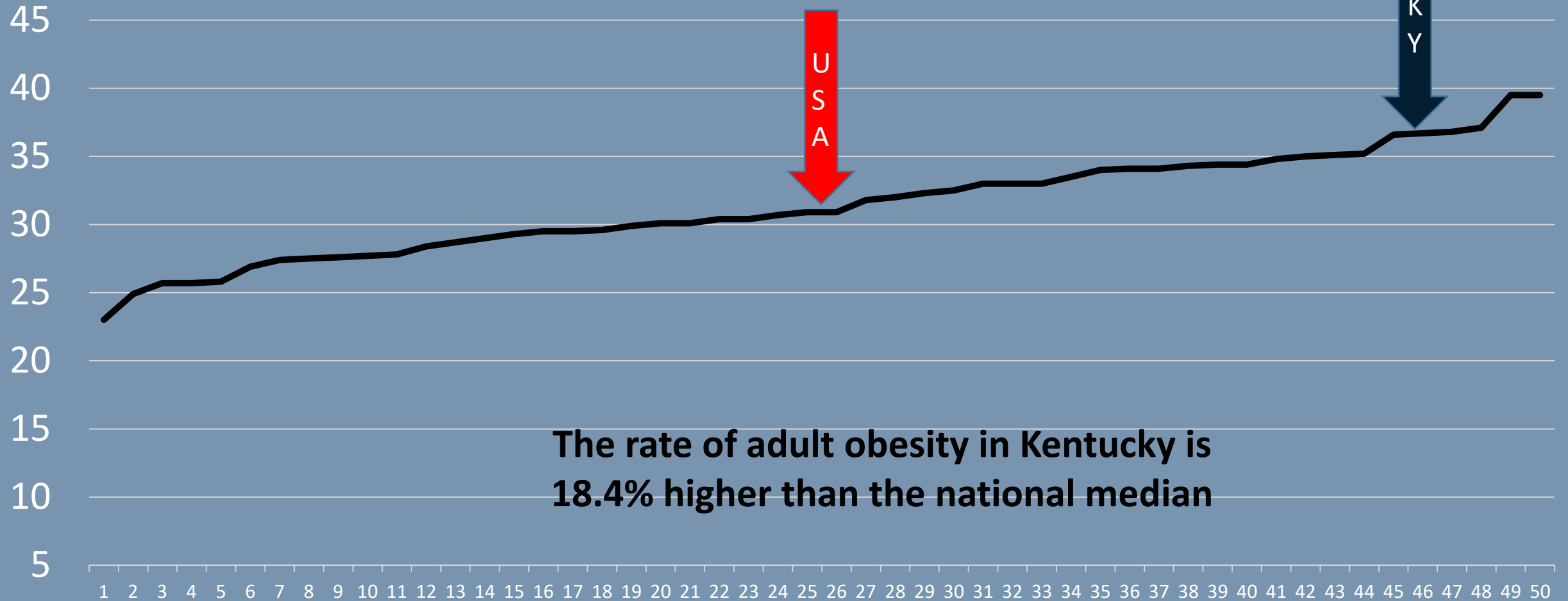


12	Massachusetts	-0.400
13	Washington	-0.363
14	Montana	-0.360
15	Maine	-0.343
16	Virginia	-0.317
17	Kansas	-0.293
18	California	-0.273
19	Rhode Island	-0.207
20	Arizona	-0.190
21	Maryland	-0.187
22	Tennessee	-0.177
23	Nebraska	-0.160
24	North Dakota	-0.153
25	Kentucky	-0.090
26	New York	-0.083
27	Pennsylvania	-0.073
28	Colorado	0.027
29	Ohio	0.040
30	Missouri	0.047
31	Hawaii	0.097
32	Iowa	0.103
33	Delaware	0.107
34	Vermont	0.127
35	Illinois	0.190
36	Florida	0.227
37	Texas	0.237
38	Minnesota	0.240
39	North Carolina	0.337

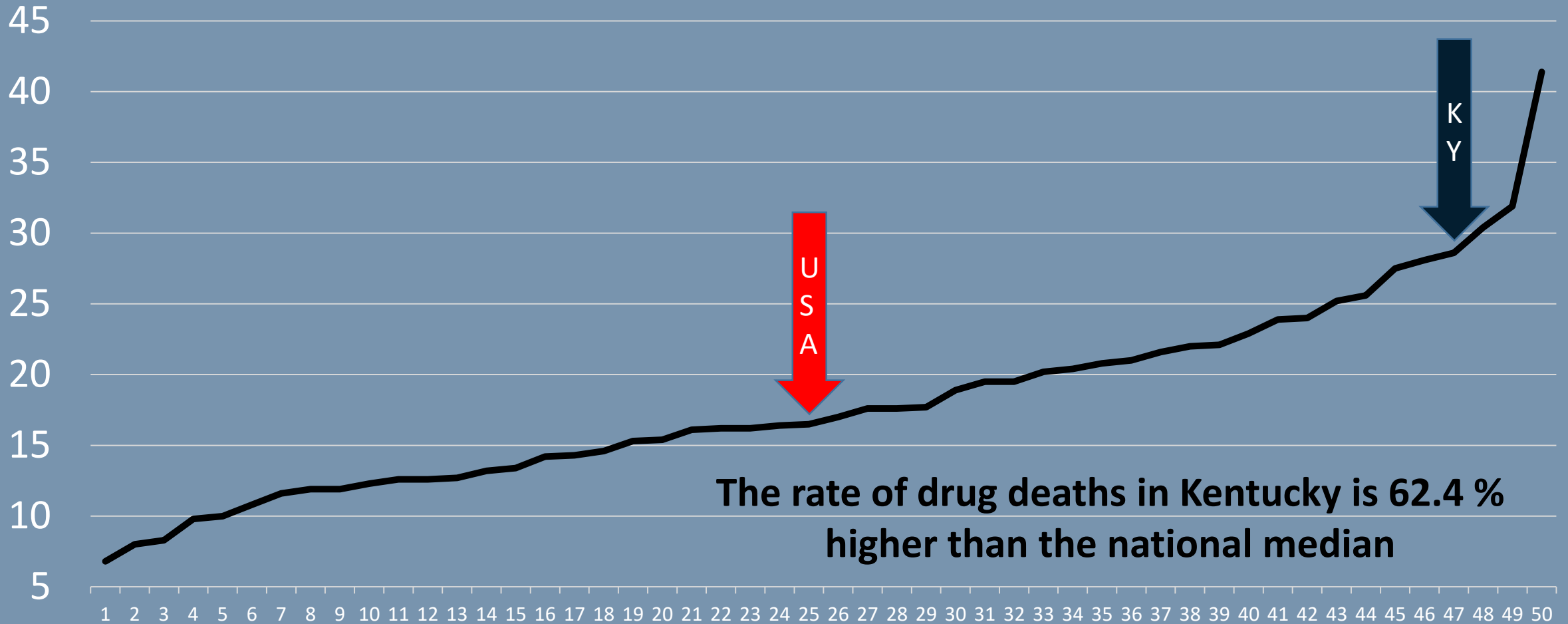
# Rate of Adult Smoking



# Rate of Adult Obesity

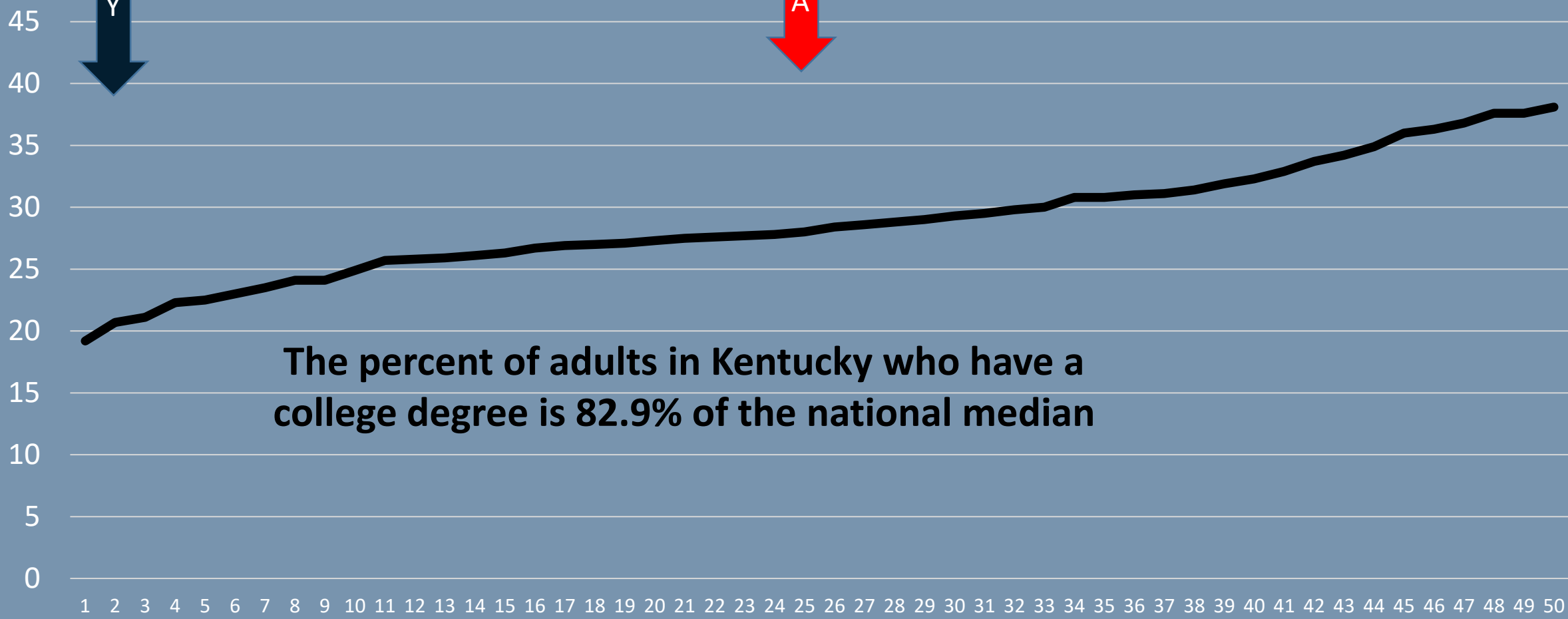


# Drug Deaths



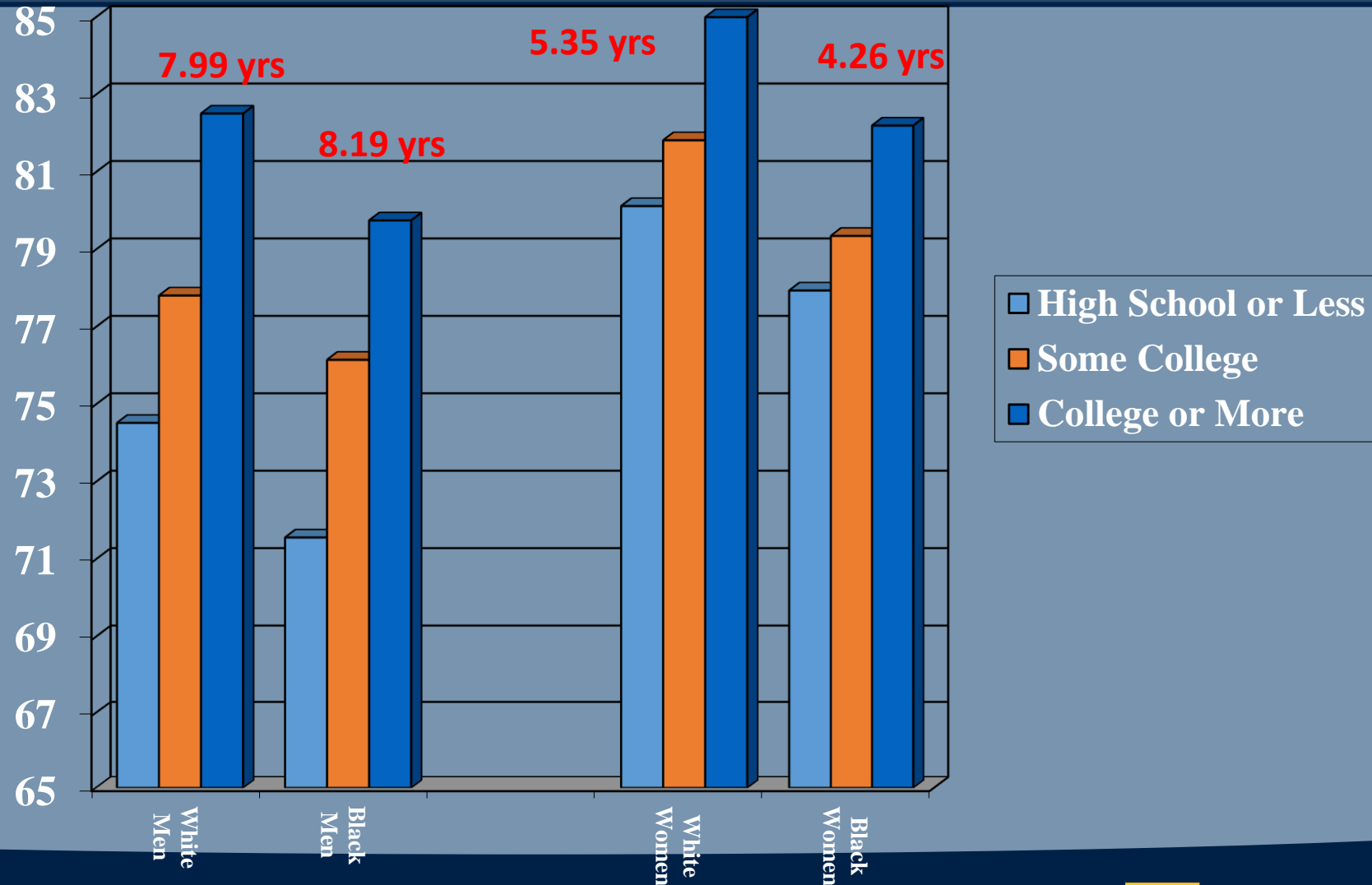


# Percent of Adults with a College Degree



The percent of adults in Kentucky who have a college degree is 82.9% of the national median

# Expected Age at Death (at Age 25) by Race, Gender and Education: 2010



“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# *Percent of High School Sophomores Who Complete College in Ten Years Based on Parents' Education Level*



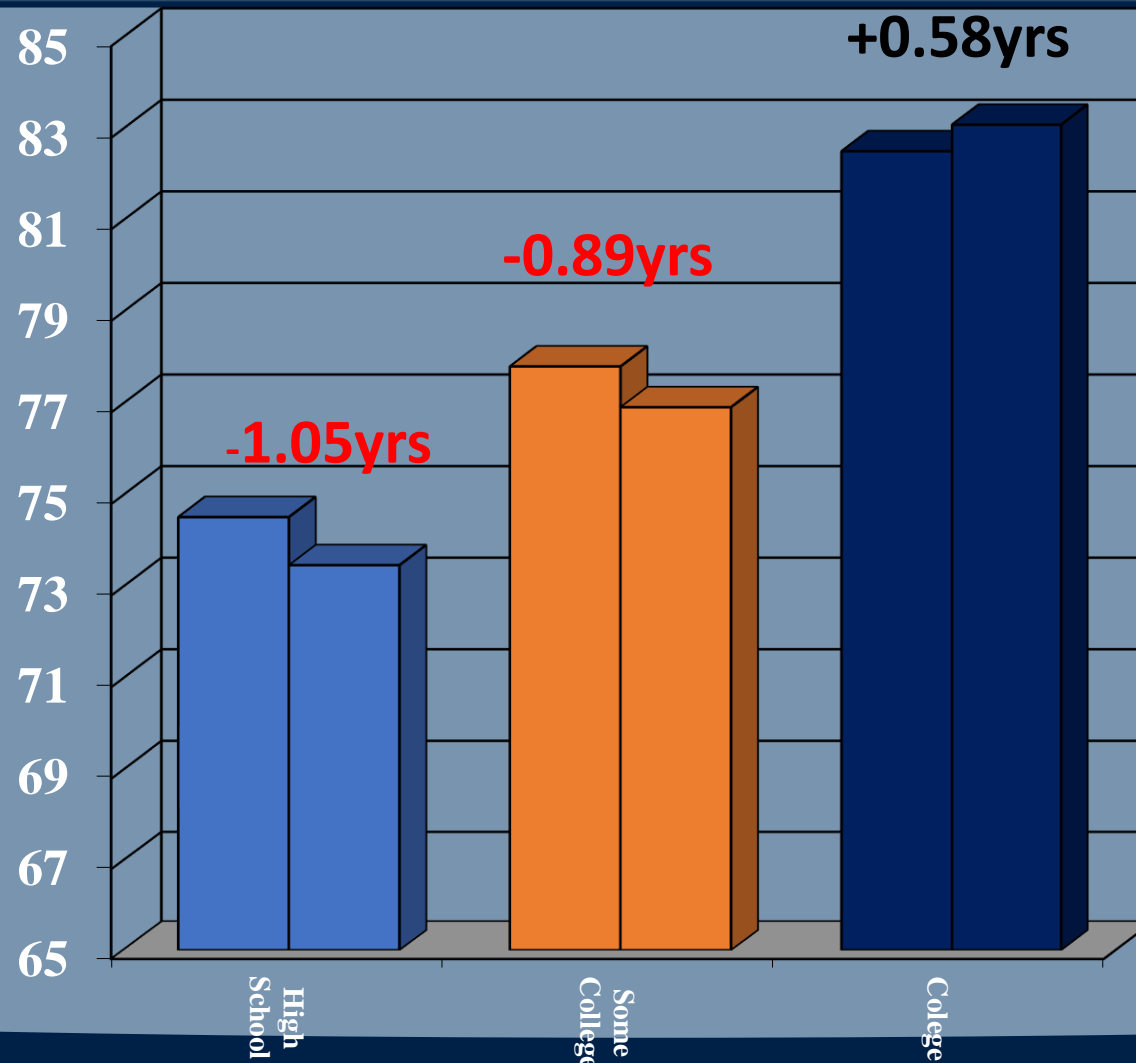
Education Matters for Health: Robert Wood Johnson Foundation. September, 2009



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Changes in Expected Age at Death (at Age 25) White Men: 2010 - 2017



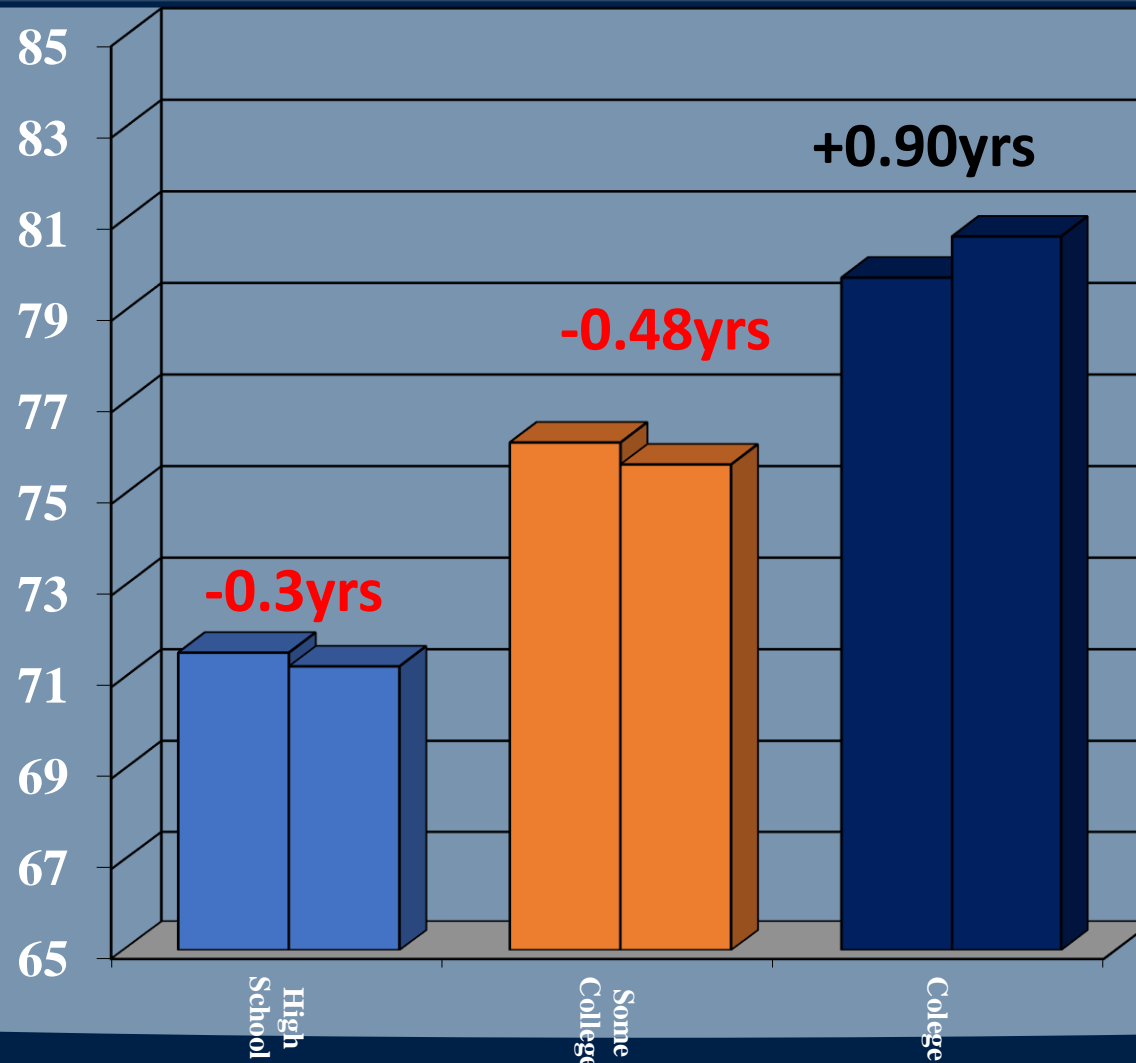
“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Changes in Expected Age at Death (at Age 25) Black Men: 2010 - 2017



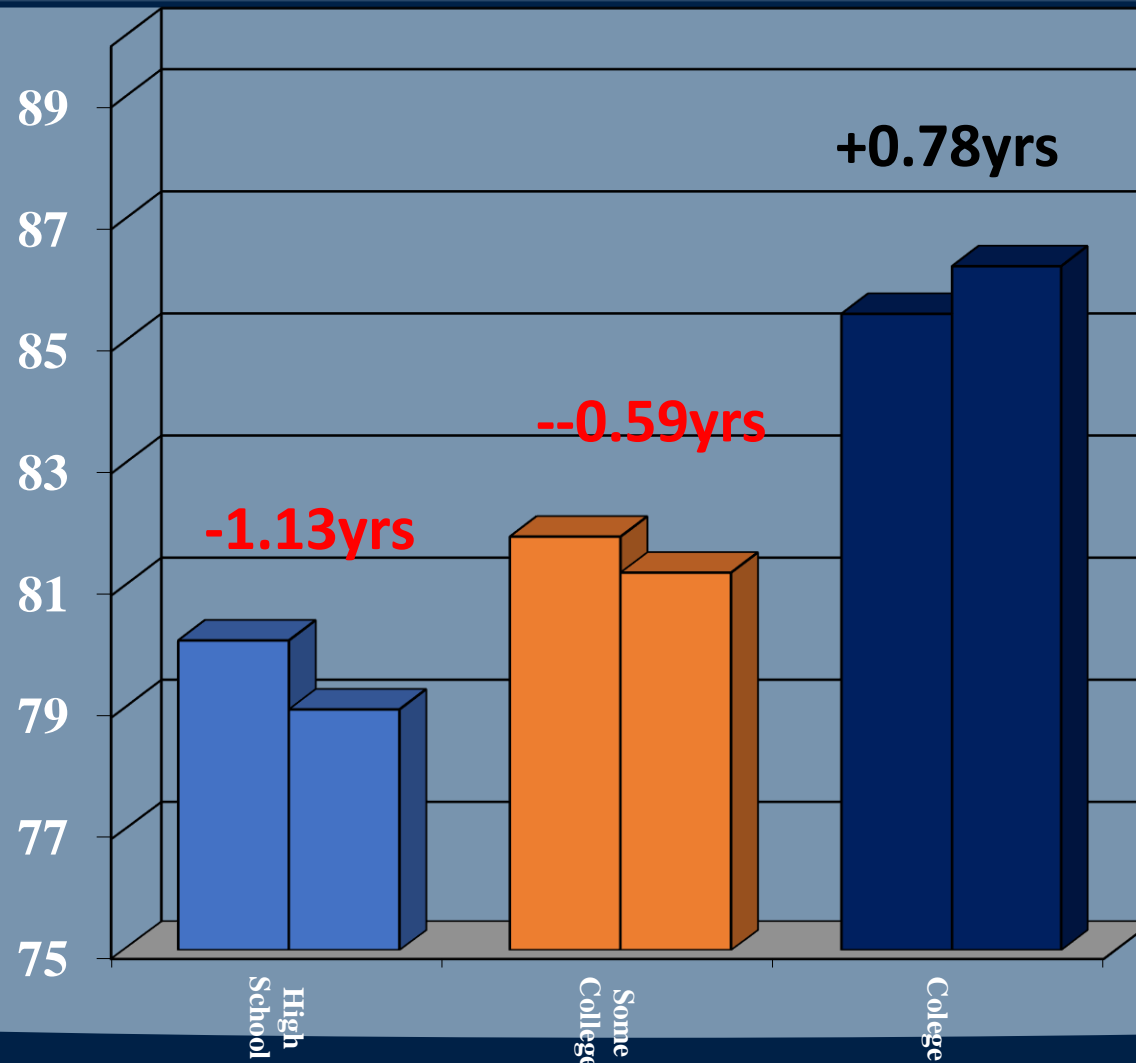
“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Changes in Expected Age at Death (at Age 25) White Women: 2010 - 2017



“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.

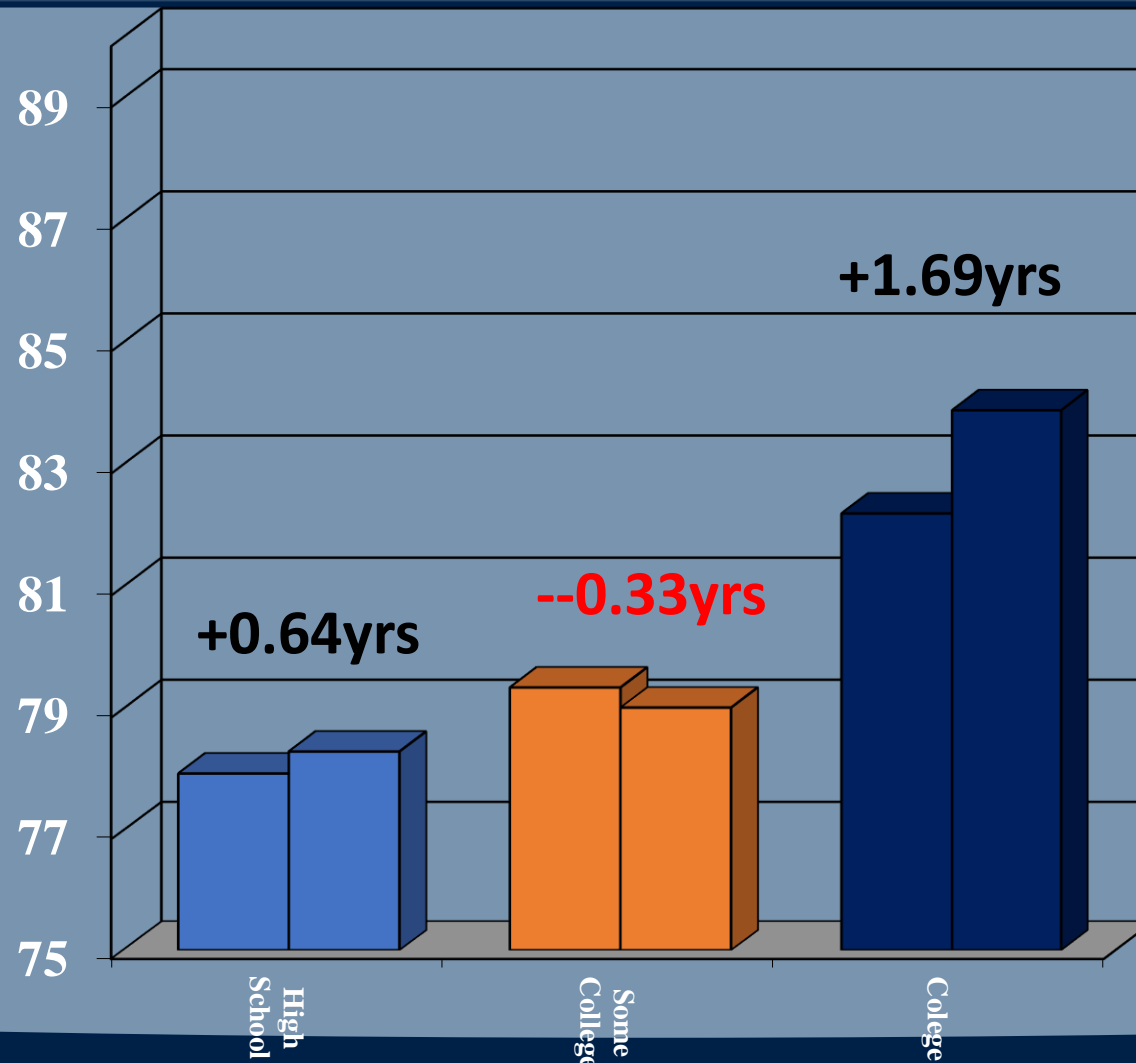


COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# *Changes in Expected Age at Death (at Age 25)*

## *Black Women: 2010 - 2017*



“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.

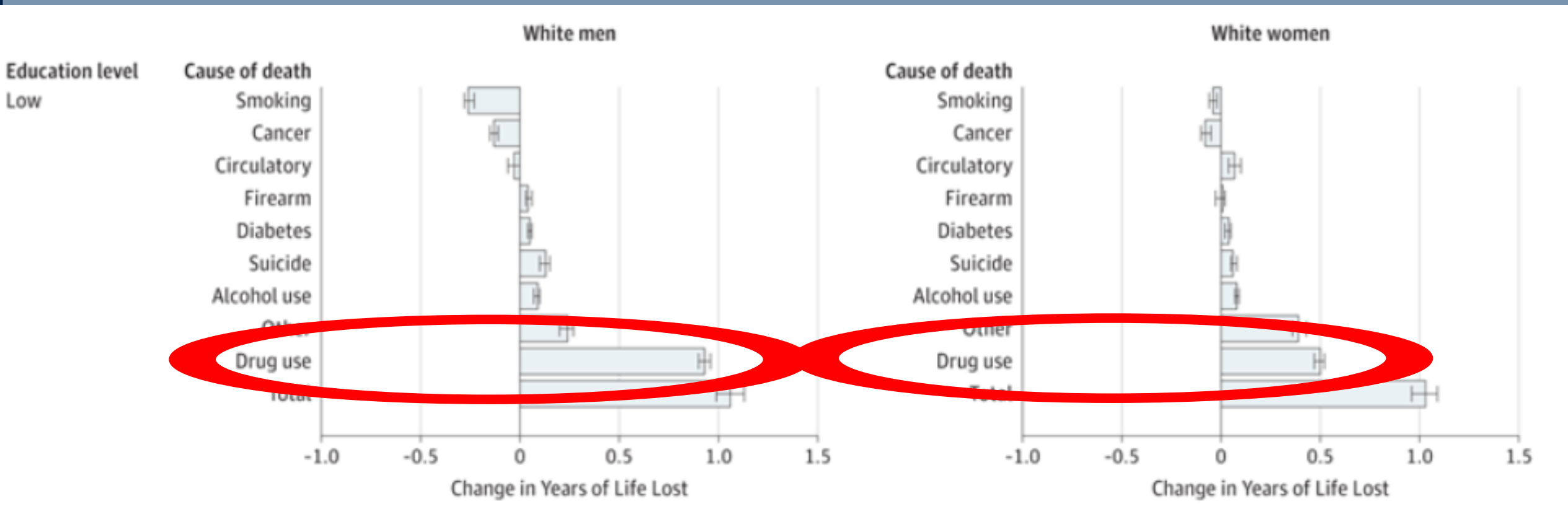


COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Cause of Life Expectancy Change

## White Men and Women with a High School Degree or Less: 2010 - 2017



“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.



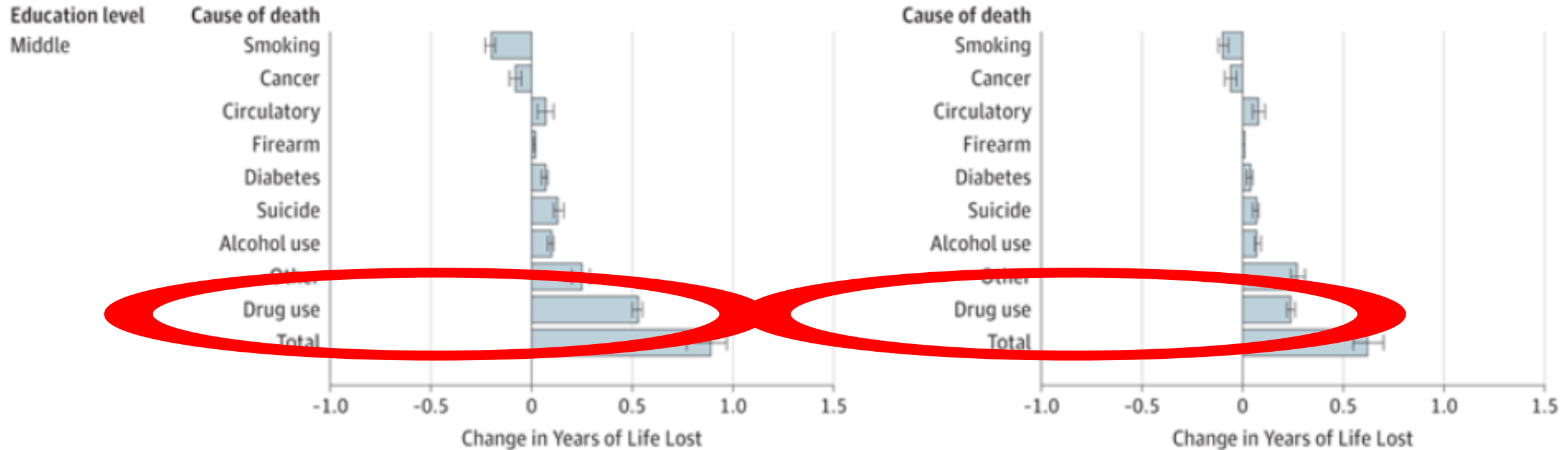
COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY



# Cause of Life Expectancy Change

## White Men and Women with Some College: 2010 - 2017



“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.

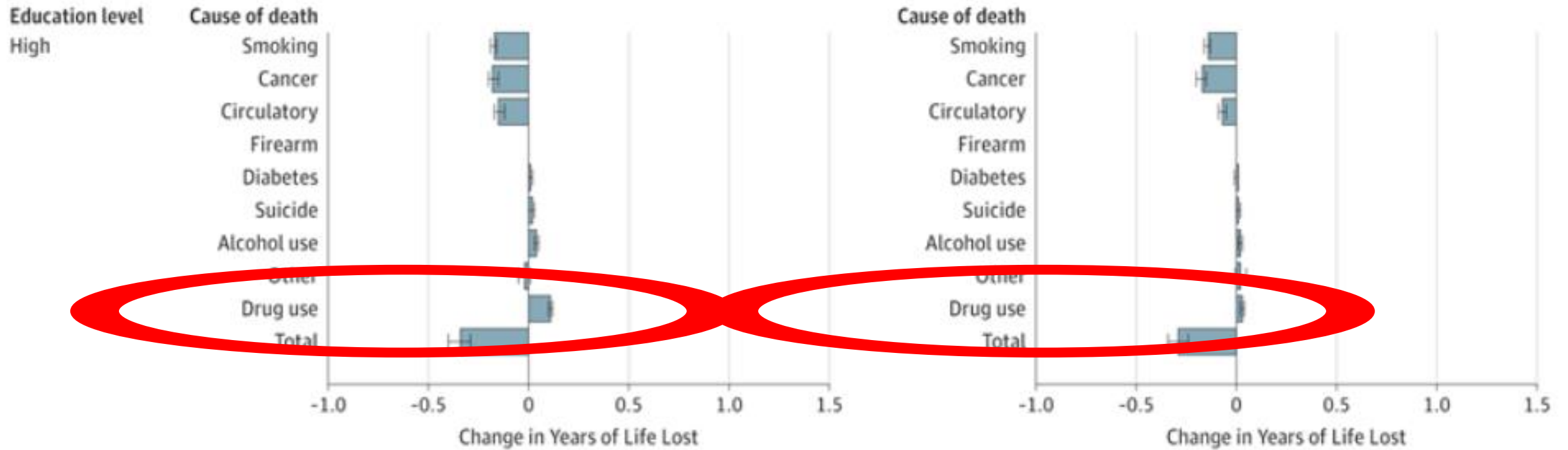


COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Cause of Life Expectancy Change

## White Men and Women with College or More: 2010 - 2017



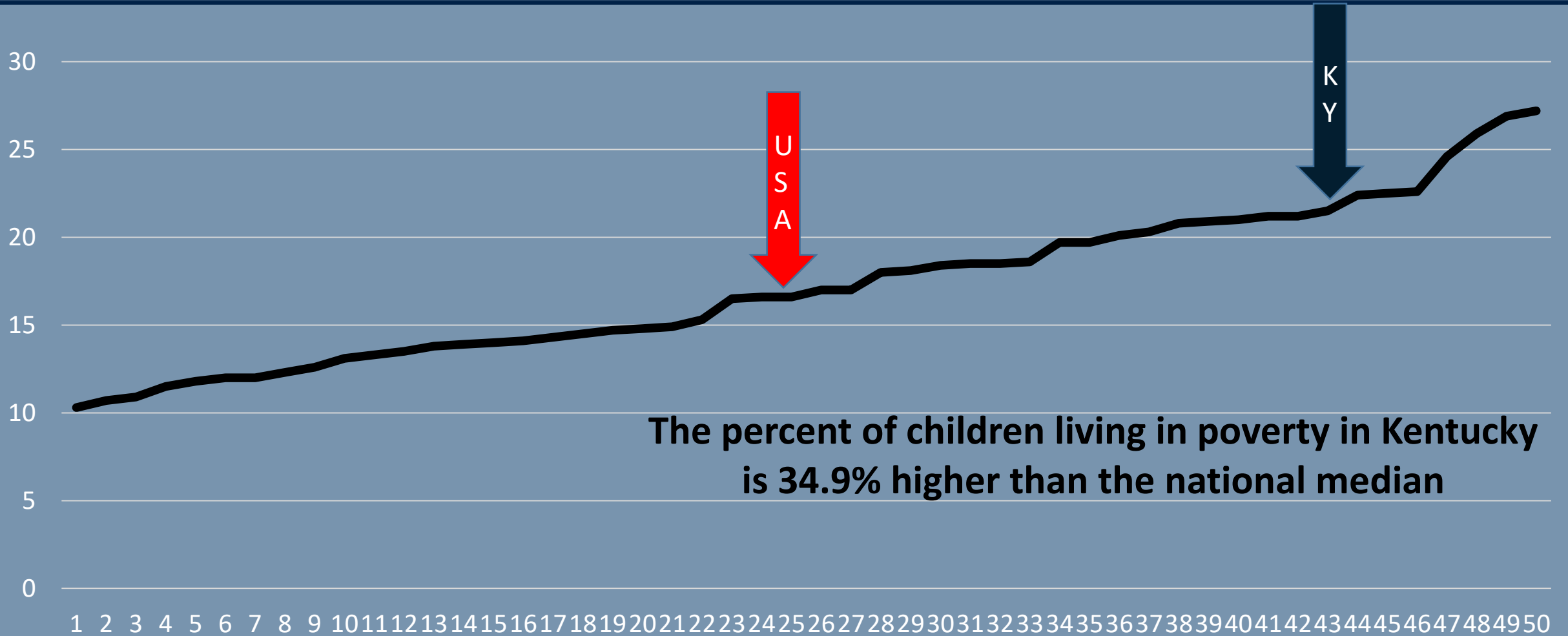
“Association Between Educational Attainment and Causes of Death Among White and Black US Adults, 2010-2017” Sasson I, Hayward MD. JAMA 2019 322: 756-763.



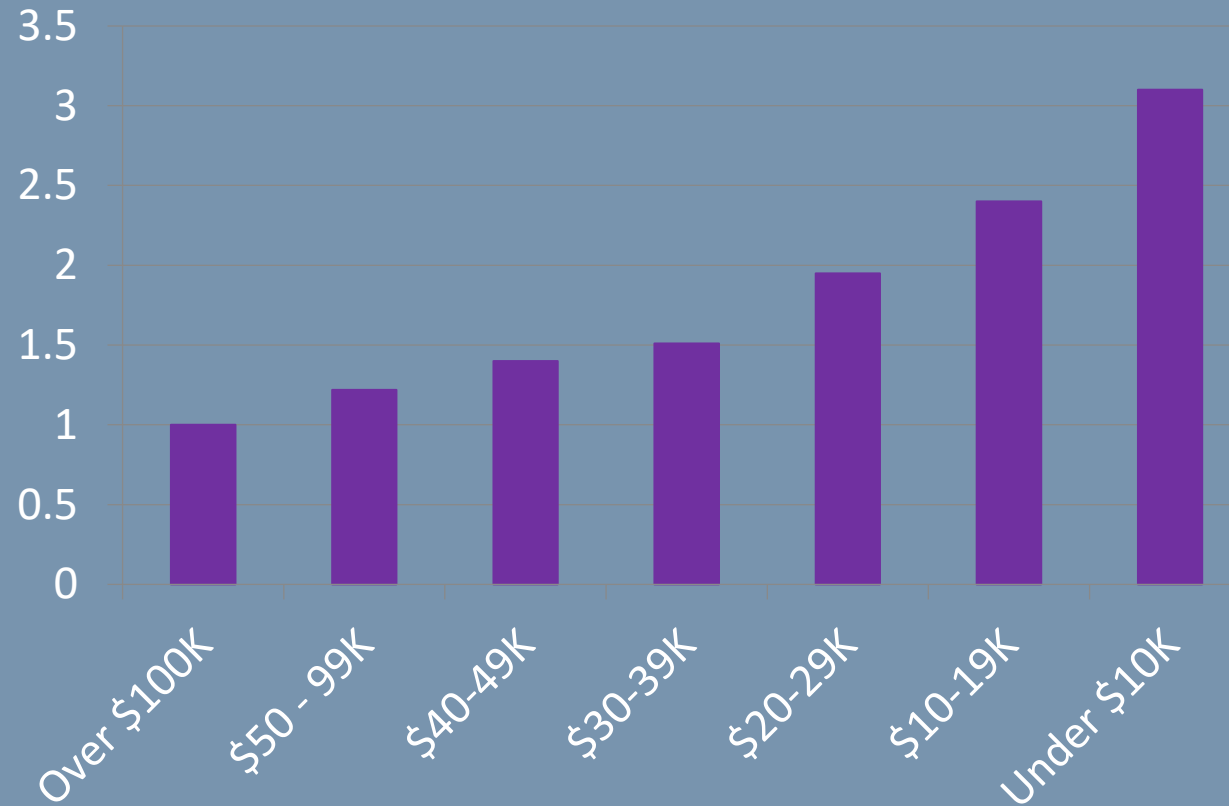
COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

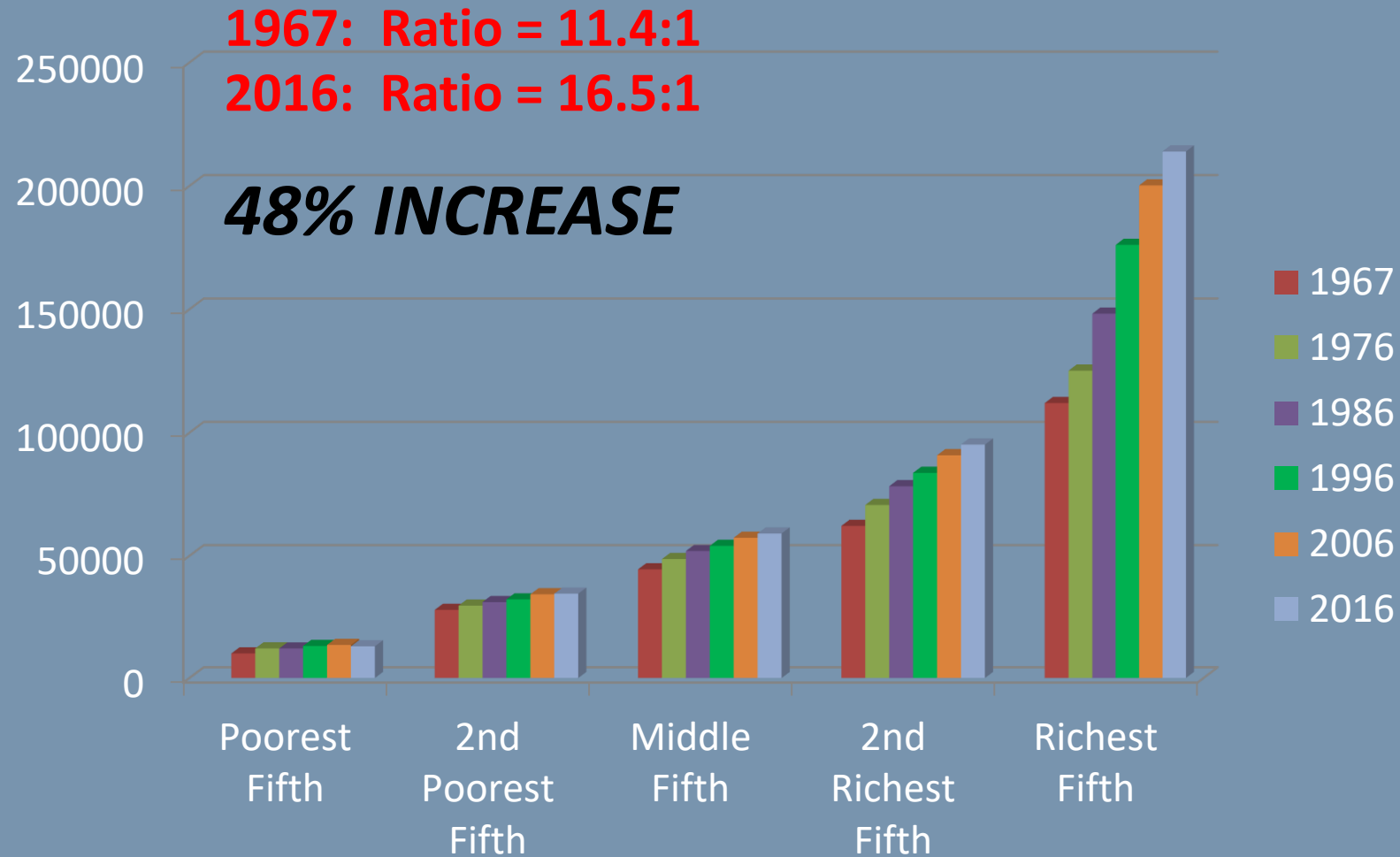
# Children Living in Poverty



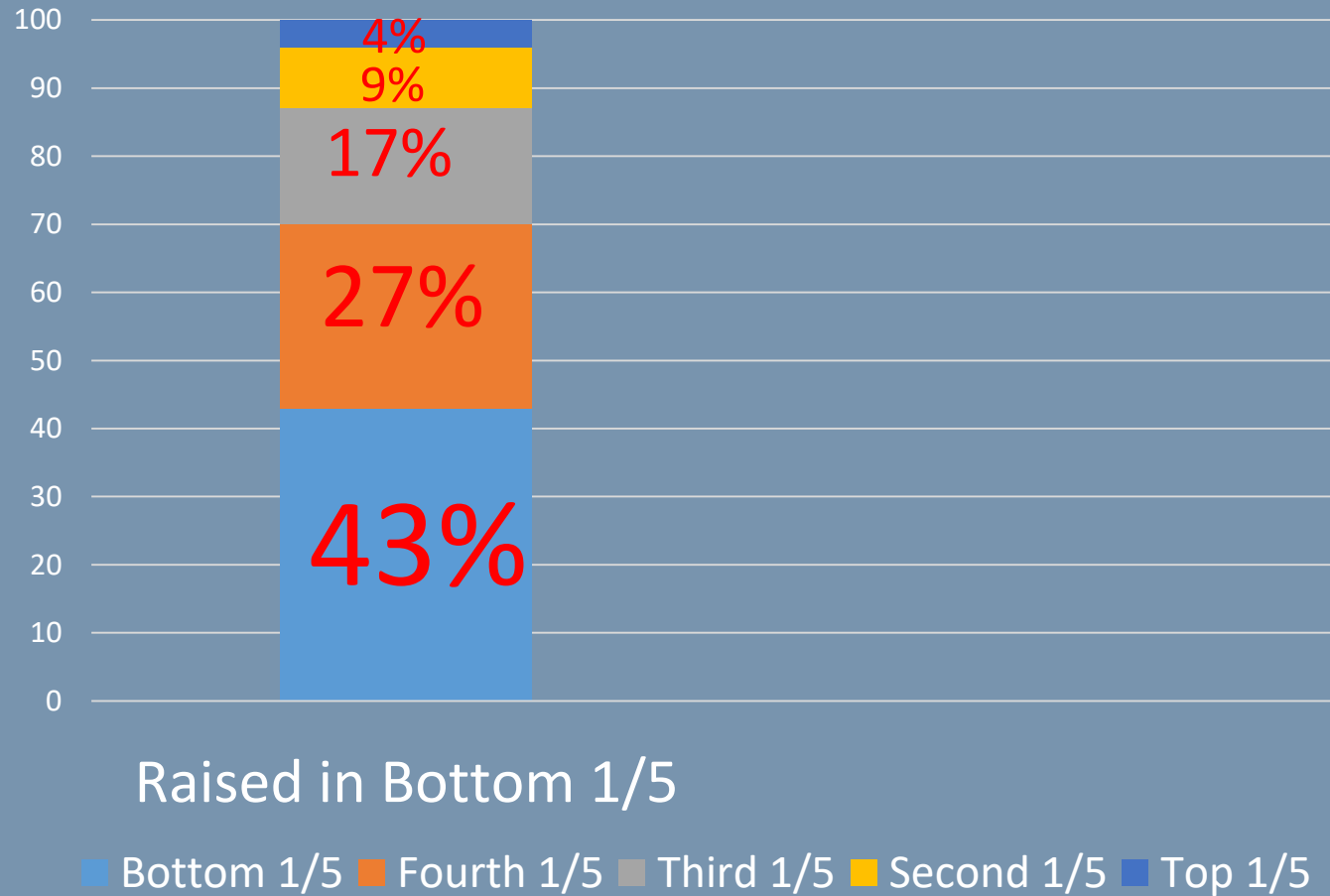
# *Relative Risk of Dying Before the Age of 65 By Income: United States*



# Selected Measures of Household Income Disparities: 1967 – 2016



# *Economic Mobility Across Generations:* Where Will You End Up Based on Where Your Started



Pursuing the American Dream: Economic Mobility Across Generations

Pew Charitable Trusts:

[http://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs\\_assets/2012/pursuingamericandream.pdf](http://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs_assets/2012/pursuingamericandream.pdf)



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# *Social Mobility in the United States*

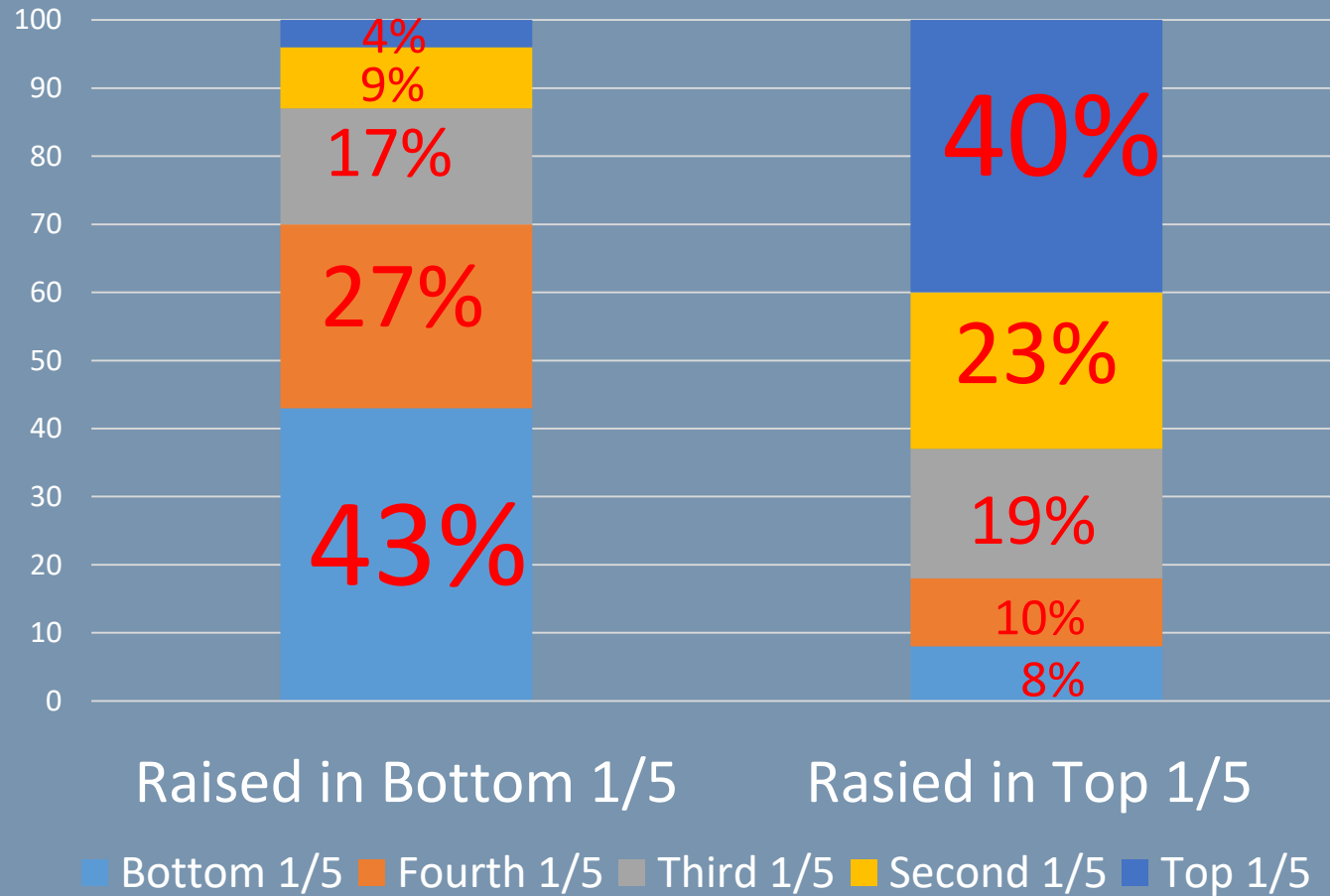
**If you are born to parents living in the bottom fifth of income in the United States. . . . .**

**Your chance of making it into the top fifth is only 4 percent (one in 25), and. . . . .**

**Your chance of making it into the top half is only about 20 percent (one in five).**



# *Economic Mobility Across Generations:* Where Will You End Up Based on Where You Started



Pursuing the American Dream: Economic Mobility Across Generations

Pew Charitable Trusts:

[http://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs\\_assets/2012/pursuingamericandream.pdf](http://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs_assets/2012/pursuingamericandream.pdf)

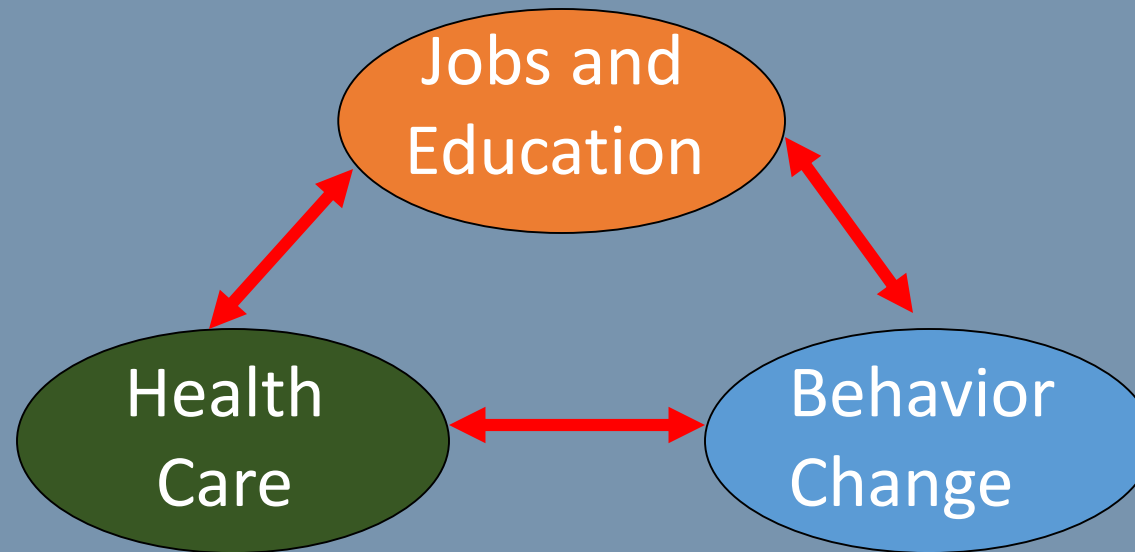


COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY



# *What Can We Do To Improve Health in Kentucky?*



# *What Can We Do To Improve Health in the United States?*

***We need to work together*** to assure access to health care, especially primary care, mental health and preventive services;

***We need to work together*** to implement evidenced-based programs related to diet, exercise, smoking and substance abuse; and

***We need to work together*** to enhance economic opportunity and improve educational achievement;



# Health and Social Conditions of the Poorest Versus Wealthiest Counties in the United States

*Olivia Egen, MPH, Kate Beatty, PhD, David J. Blackley, DrPH, Katie Brown, MPH, and Randy Wykoff, MD*

**Objectives.** To more clearly articulate, and more graphically demonstrate, the impact of poverty on various health outcomes and social conditions by comparing the poorest counties to the richest counties in the United States and to other countries in the world.

**Methods.** We used 5-year averages for median household income to form the 3141 US counties into 50 new “states”—each representing 2% of the counties in the United States (62 or 63 counties each). We compared the poorest and wealthiest “states.”

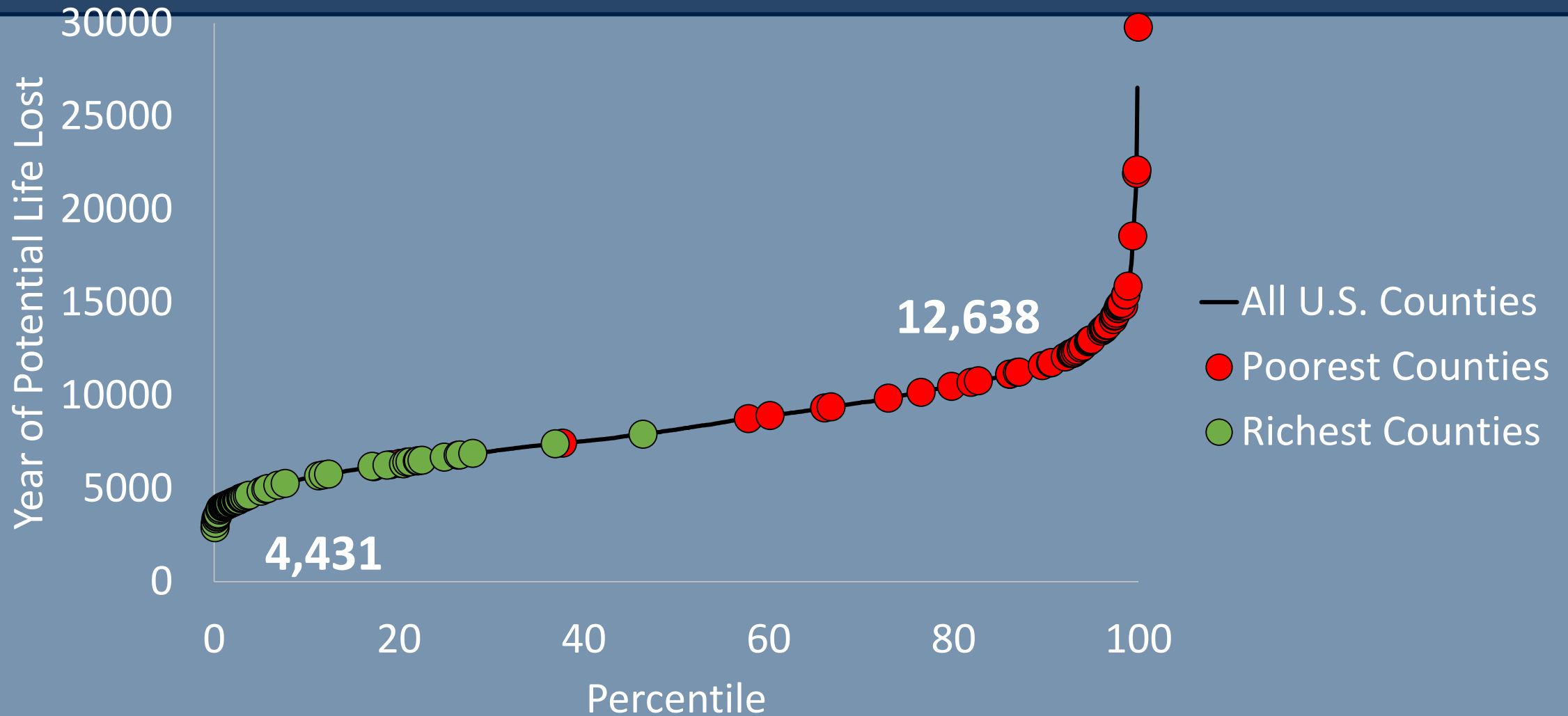
**Results.** We documented dramatic and statistically significant differences in life expectancy, smoking rates, obesity rates, and almost every other measure of health and well-being between the wealthiest and poorest “states” in the country. The populations of more than half the countries in the world have a longer life expectancy than do US persons living in the poorest “state.”

**Conclusions.** This analysis graphically demonstrates the true impact of the extreme socioeconomic disparities that exist in the United States. These differences can be obscured when one looks only at state data, and suggest that practitioners and policymakers should increasingly focus interventions to address the needs of the poorest citizens in the United States. (*Am J Public Health.* 2017;107:130–135. doi:10.2105/AJPH.2016.303515)

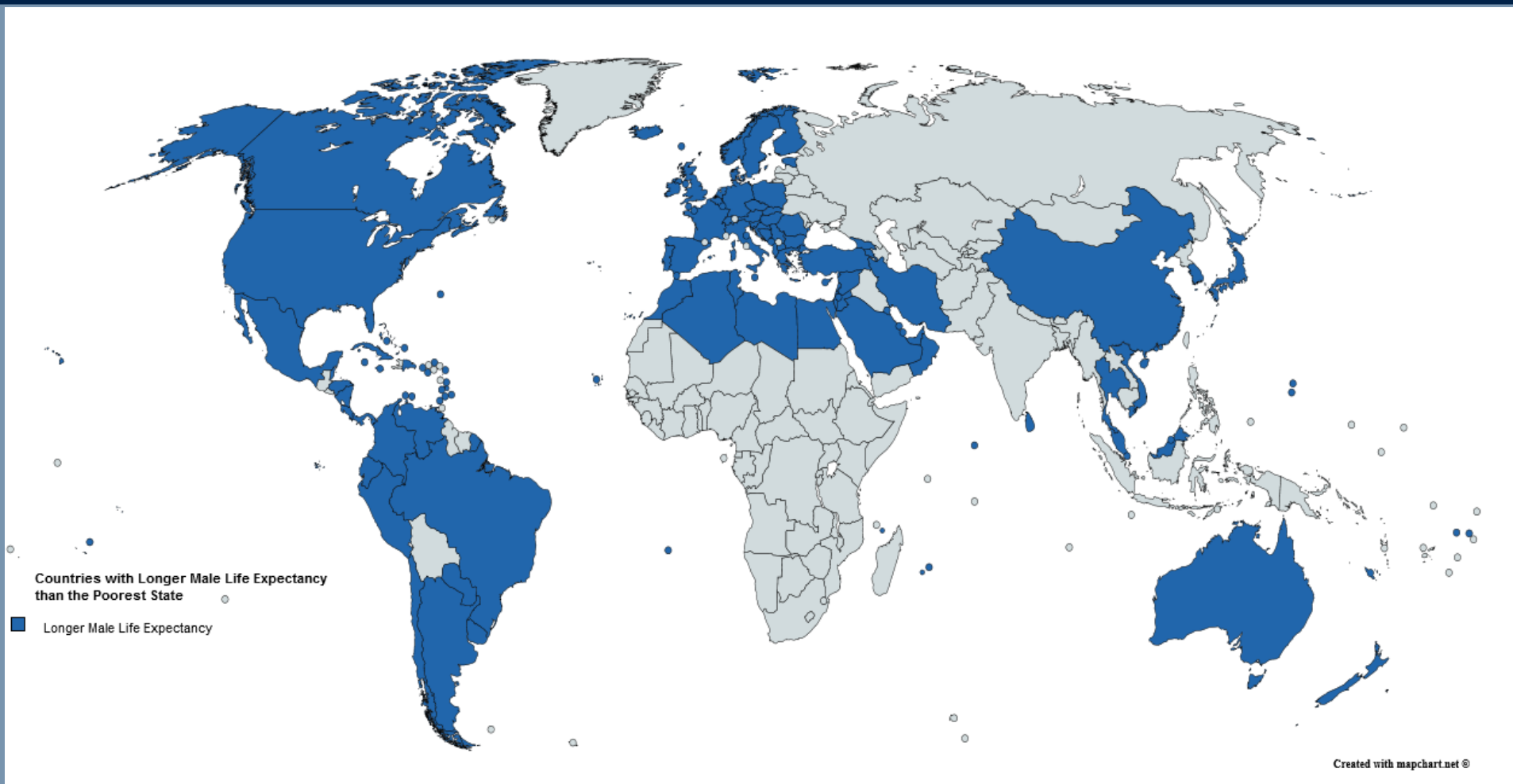
socioeconomic status indicator of 5-year average median household income. We included a total of 3141 counties in the analysis because these are the county (or county-equivalents) as identified by the County Health Rankings (CHR) National Data.<sup>17</sup>

Once we had stratified all 3141 counties by 5-year average median household income, we faced the question as to whether we should create our new “states” on the basis of total population (i.e., each new “state” should have the same population) or on total number of counties (i.e., each new “state” should have the same number of counties). A set of analyses (not shown) has indicated that, although population does have a modest impact on health disparities, it is much less impactful than poverty. Using the same number of counties most clearly reflects the

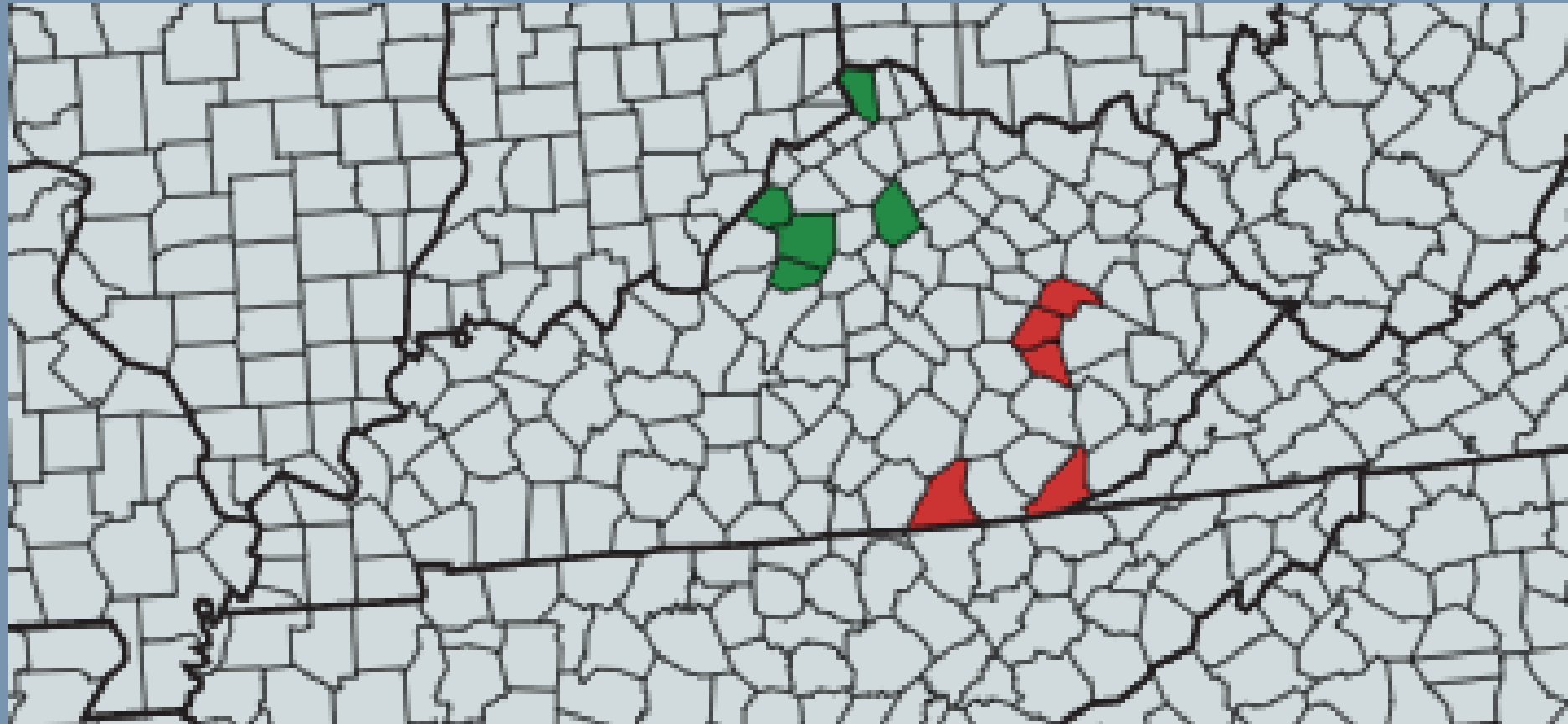
# Premature Death(YPLL): 2% Wealthiest Counties vs 2% Poorest Counties



# *Where Do Men Live Longer Than in America's "Poorest State?"*



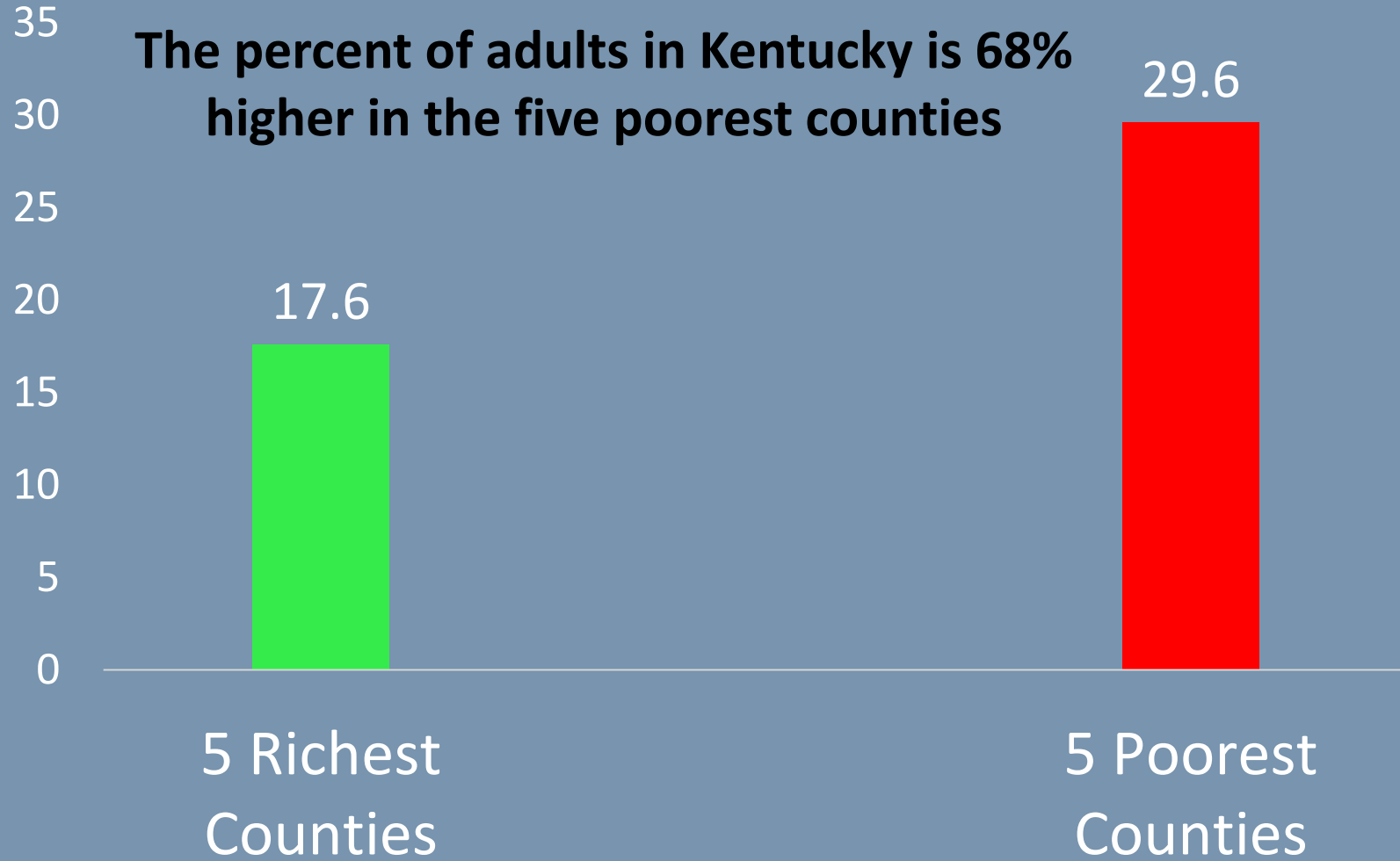
# *The Five Wealthiest (Green) and Five Poorest (Red) Counties in Kentucky*



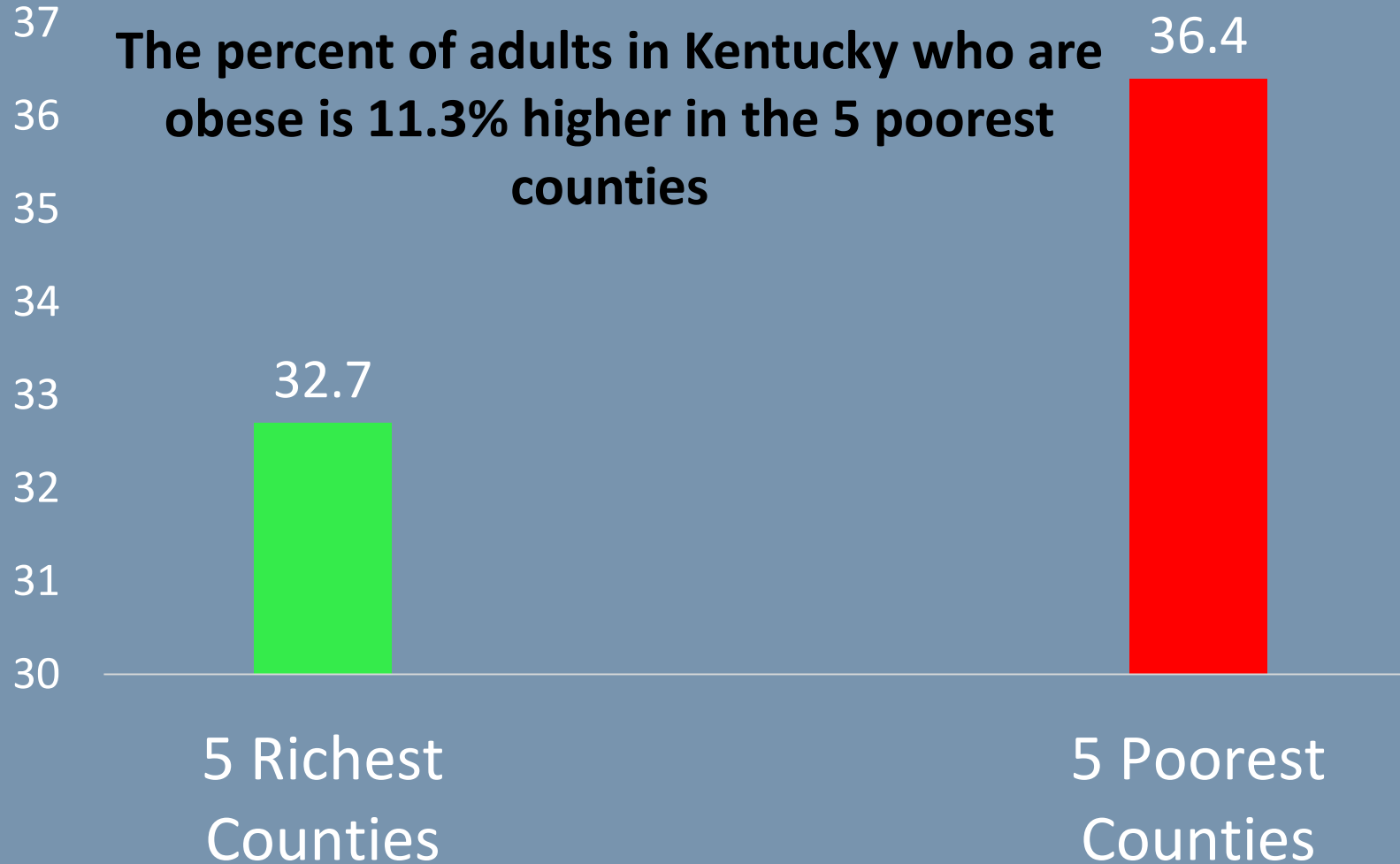
COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY

# Adult Smoking Rate: Kentucky

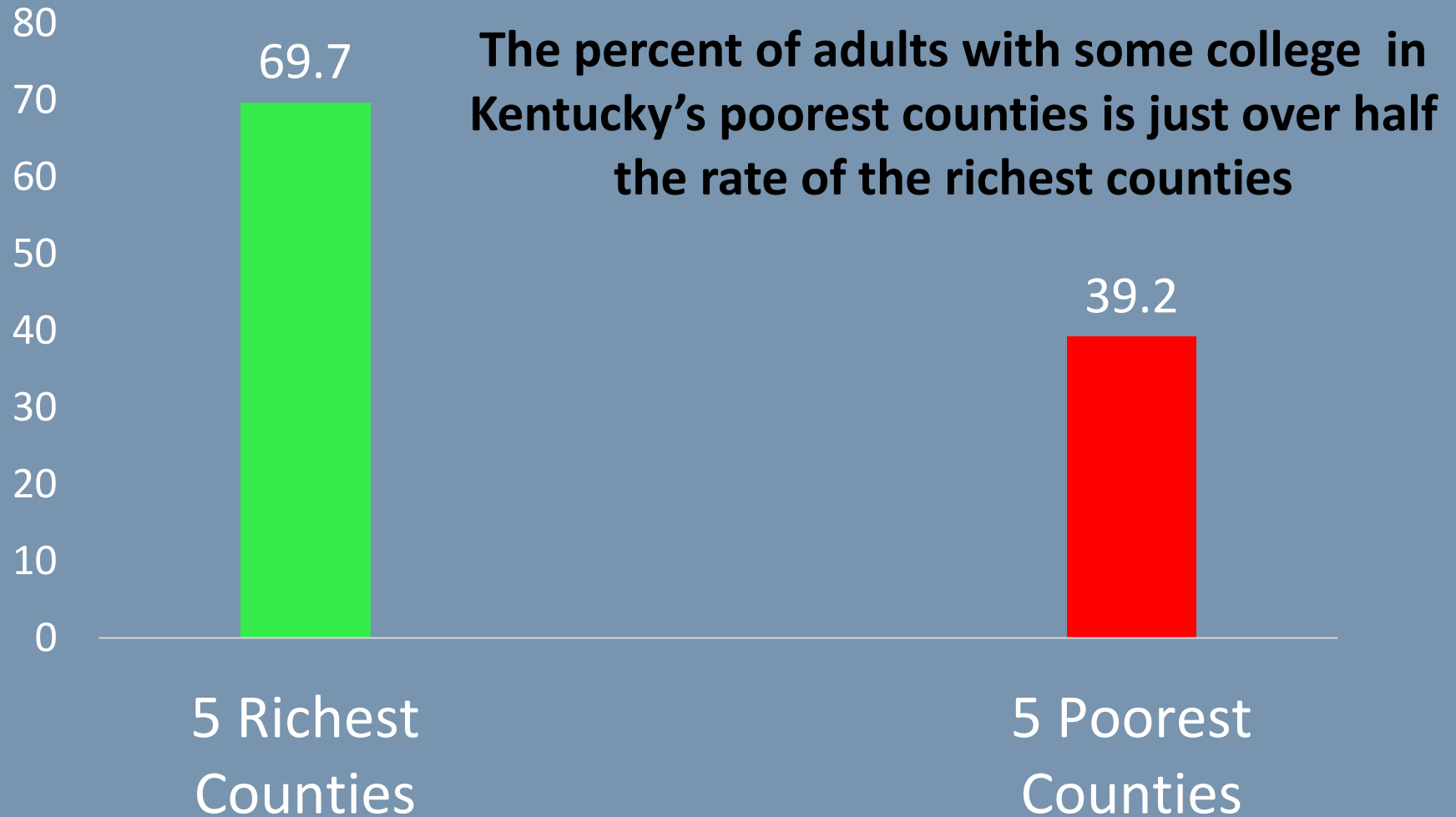


# Adult Obesity Rate: Kentucky

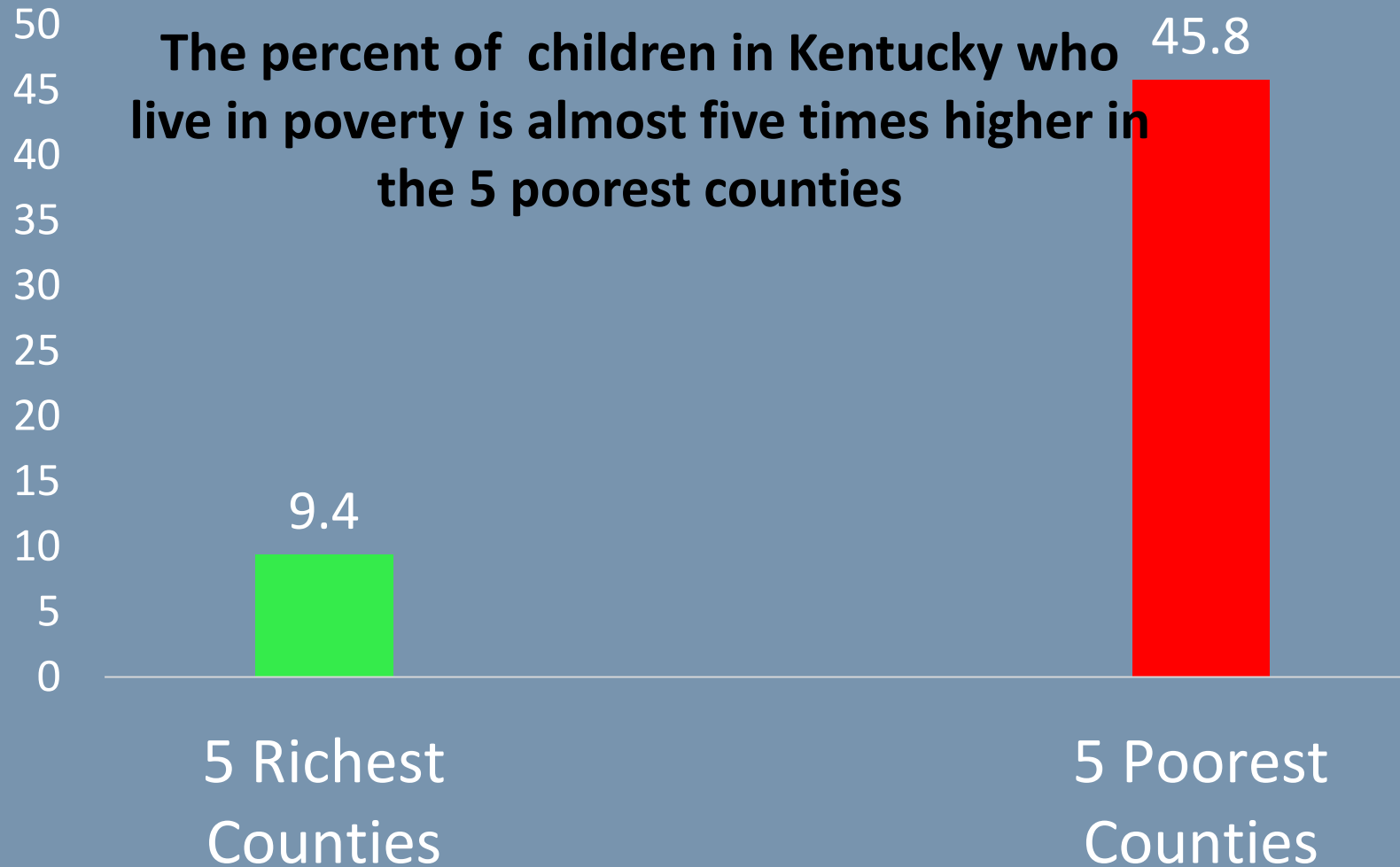




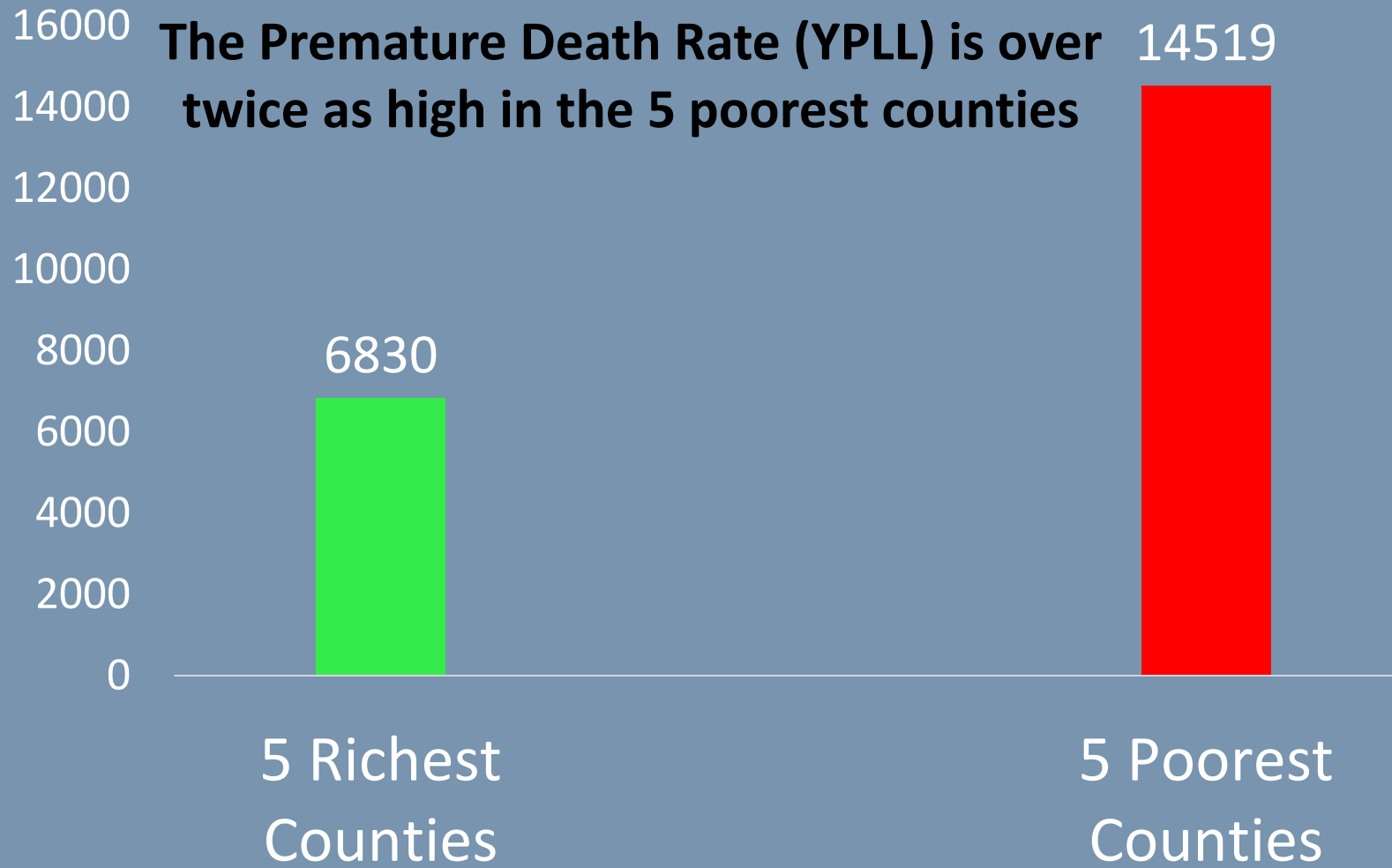
# Adults with Some College: Kentucky



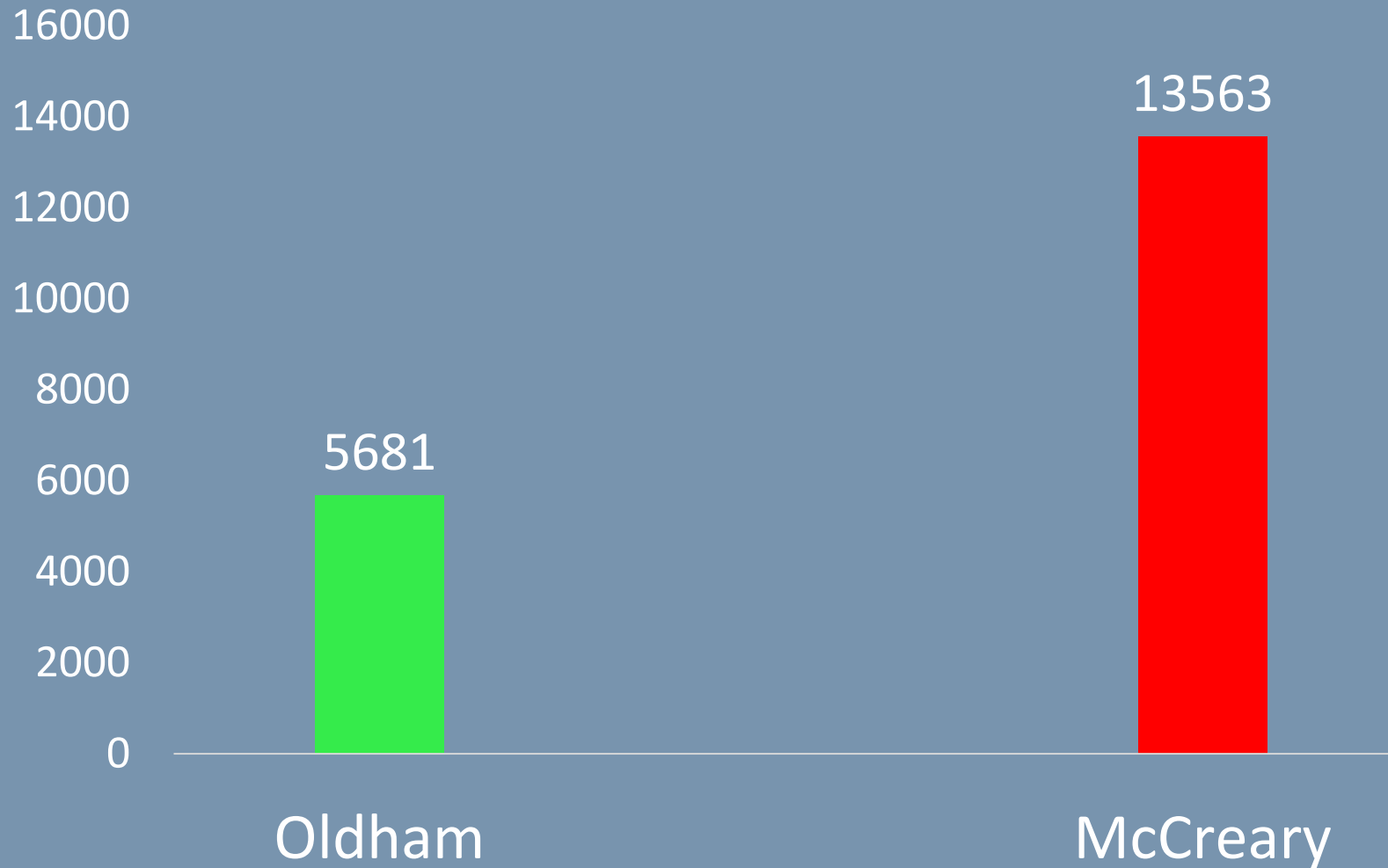
# Children Living in Poverty: Kentucky



# Premature Death Rate (YPLL): Kentucky



# *Premature Death Rate (YPLL): Kentucky: Richest vs. Poorest County*



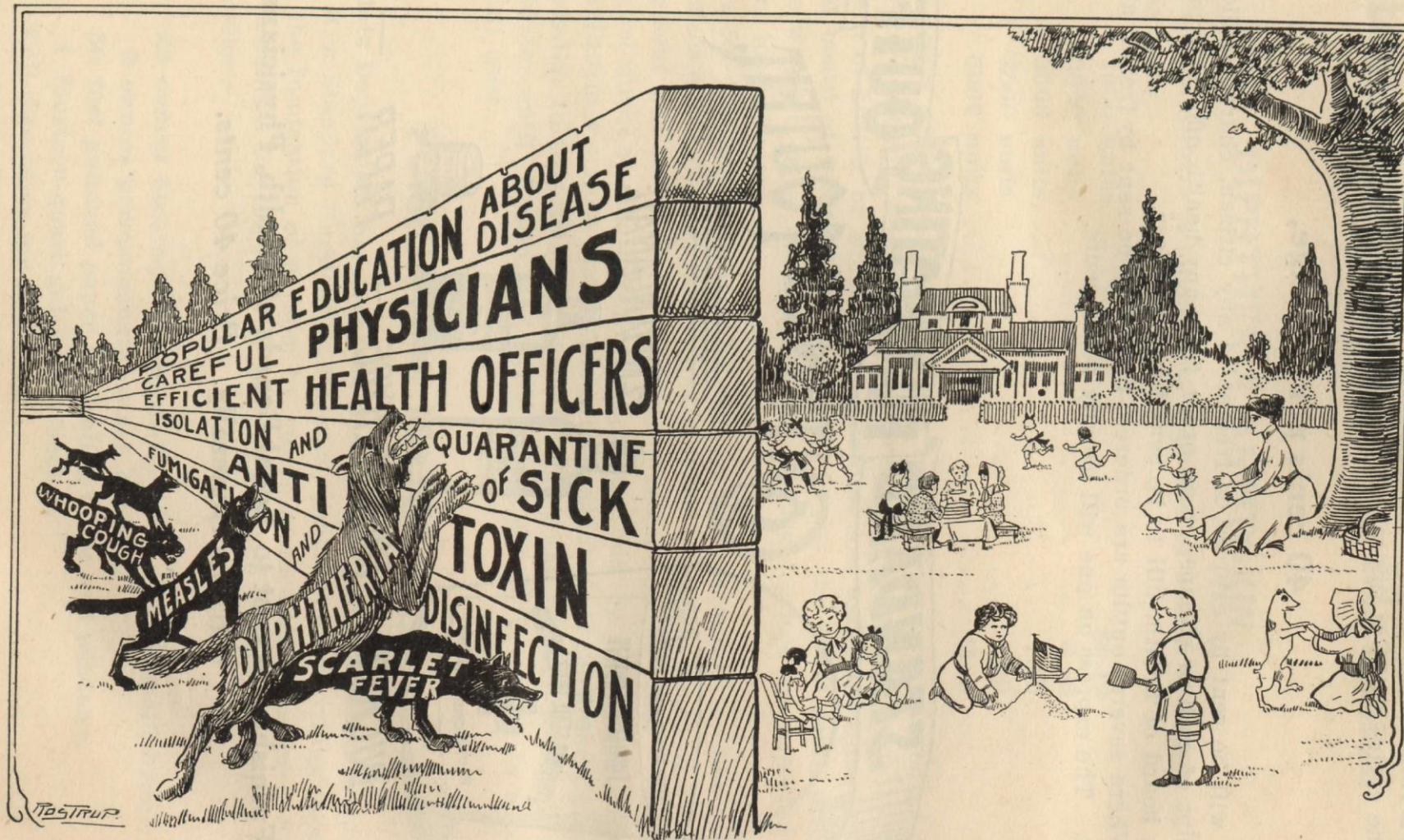
# Premature (Early) Death Rates:

## Where would Kentucky be if it were like Oldham or McCreary

1. Minnesota	5653	18 Virginia	6877	34 Michigan	8102
2. California	5734	19 North Dakota	7047	35 North Carolina	8177
3. Connecticut	5923	20 New Hampshire	7067	36 Georgia	8391
4. Washington	5942	21 Illinois	7127	37 Alaska	8666
5. Utah	6565	22 Texas	7199	38 Missouri	8717
6. New York	5978	23 Kansas	7350	39 Indiana	8774
7. Massachusetts	6097	<b>UNITED STATES</b>	<b>7432</b>	40 Ohio	8998
8. Hawaii	6104	24. Maine	7464	41 South Carolina	9232
9. New Jersey	6225	25. South Dakota	7499	42 New Mexico	9301
10. Colorado	6352	26. Arizona	7502	43 Tennessee	9756
11. Nebraska	6401	27. Wyoming	7636	44 Oklahoma	9992
12. Oregon	6511	28. Maryland	7655	45 Arkansas	10,099
13. Rhode Island	6561	29. Florida	7790	46 Louisiana	10,125
14. Vermont	6563	30. Nevada	7899	47 Kentucky	10,479
15. Idaho	6723	31. Montana	7900	48 Alabama	10,720
16. Iowa	6812	32. Delaware	7992	49 Mississippi	11,082
17. Wisconsin	6821	33. Pennsylvania	8013	50 West Virginia	11,136

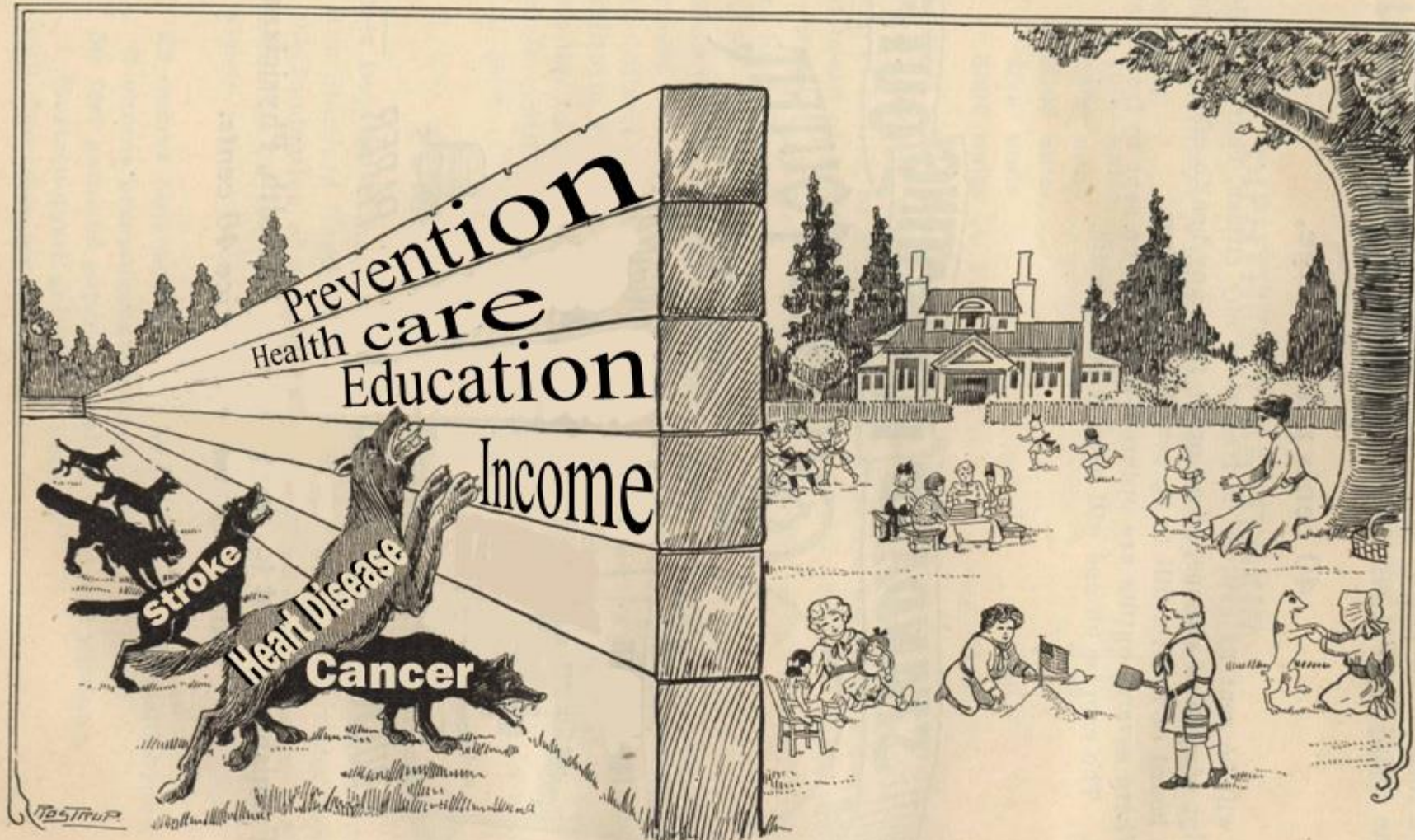


# The "Virginia Health Bulletin" 1908 and 1909



How High is the Wall in Your Town?

# The "Virginia Health Bulletin" 1908 and 1909



How High is the Wall in Your Town?

## *This Doesn't Just Impact The Poor It Impacts All of Us. . .*

- “For unto whomsoever much is given, of him shall be much required.” Luke 12:48
- “Those who withhold in miserliness what Allah has given them out of His grace should not take it as good for them. Instead, it is bad for them.” Quran 3:180
- “Teach this simple truth to all: A generous heart, kind speech, and a life of service and compassion are the things which renew humanity.” Siddhartha Gautama Buddha
- “It is not enough to be compassionate. You must act.” H.H. Dalai Lama Tesin Gyatso
- “The best way to find yourself is to lose yourself in the service of others.” Mahatma Gandhi
- “Help thy brother’s boat across, and lo! thine own has reached the shore.” Hindu Proverb
- “The agony of the poor impoverishes the rich. . .We are inevitably our brother’s keepers because we are our brother’s brother.” Martin Luther King, Jr.





*Please Feel Free to Contact Me...*

Randy Wykoff, MD, MPH & TM

Professor and Dean

College of Public Health

Director

Center for Rural Health Research

East Tennessee State University

(423) 439-4243

[wykoff@etsu.edu](mailto:wykoff@etsu.edu)



COLLEGE of  
PUBLIC HEALTH

EAST TENNESSEE STATE UNIVERSITY