

State Disparities in Colorectal Cancer Mortality Patterns in the United States

Cancer Epidemiol Biomarkers Prev

Embargoed, July 7, 2011

Deepa Naishadham, MA, MS
Surveillance Research
American Cancer Society

June 23, 2011
NAACCR



Background

Colorectal Cancer (CRC) mortality rates in the US have been decreasing for several decades and this decrease has accelerated in the most recent time period.

Objectives

- **Whether the decreasing Colorectal Cancer (CRC) mortality rates vary across states.**
- **Whether this accelerated decrease has influenced the geographic patterns of the rates across the nation.**

METHODS

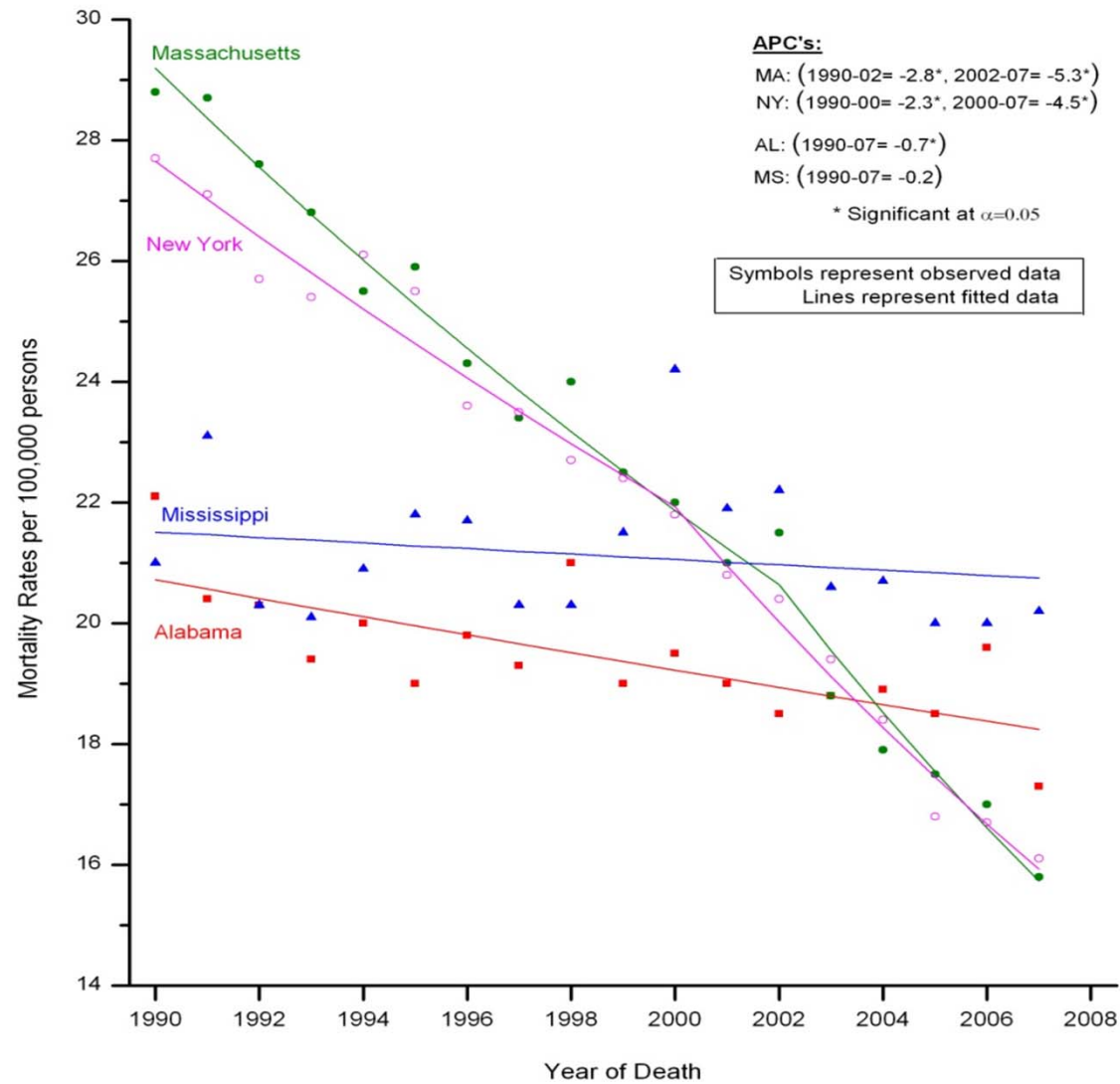
- Temporal trends in age-standardized CRC death rates from 1990-2007 were examined using joinpoint regression
- Change in death rates between 1990-94 and 2003-07 were calculated using rate ratios
 - US state maps were created to illustrate changes in geographic patterns of CRC death rates between 1990-94 and 2003-07
- Relationship between percent change in death rates from 1990-94 and 2003-07 and screening rates for 2004 (BRFSS) was examined using Pearson's correlation (SAS)

RESULTS

State trends in CRC mortality rates based on Joinpoint analysis, 1990-2007

- Decreasing trend in all states, except in Mississippi.
- In the NE states, APC:
 - RI 6.3*
 - MA 5.3*
 - CT 5.1*
 - NY 4.5*
- In Southern states, APC:
 - KY 1.7*
 - WV 1.2*
 - AL 0.7*
 - MS 0.2**

Extremes of variation in state trends in CRC mortality rates, 1990-2007



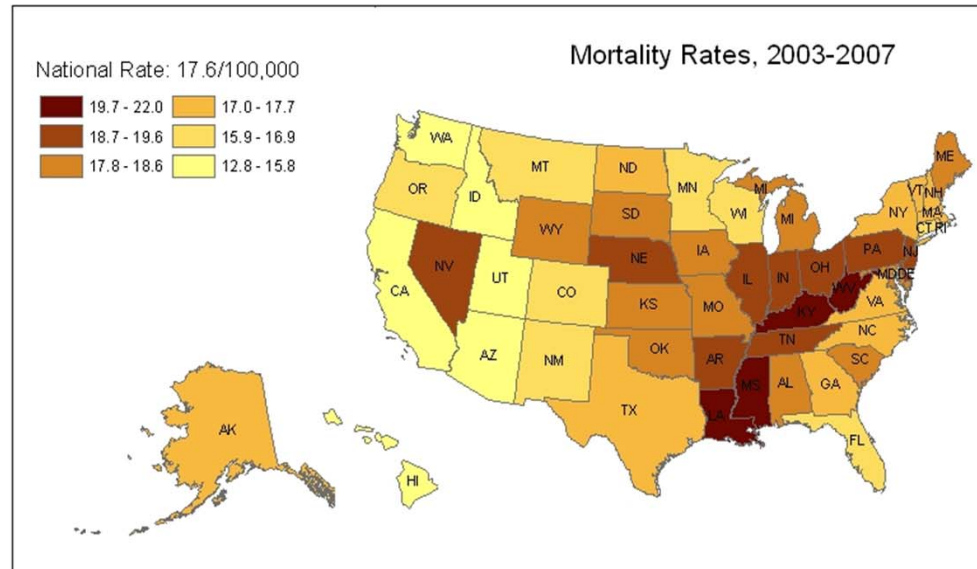
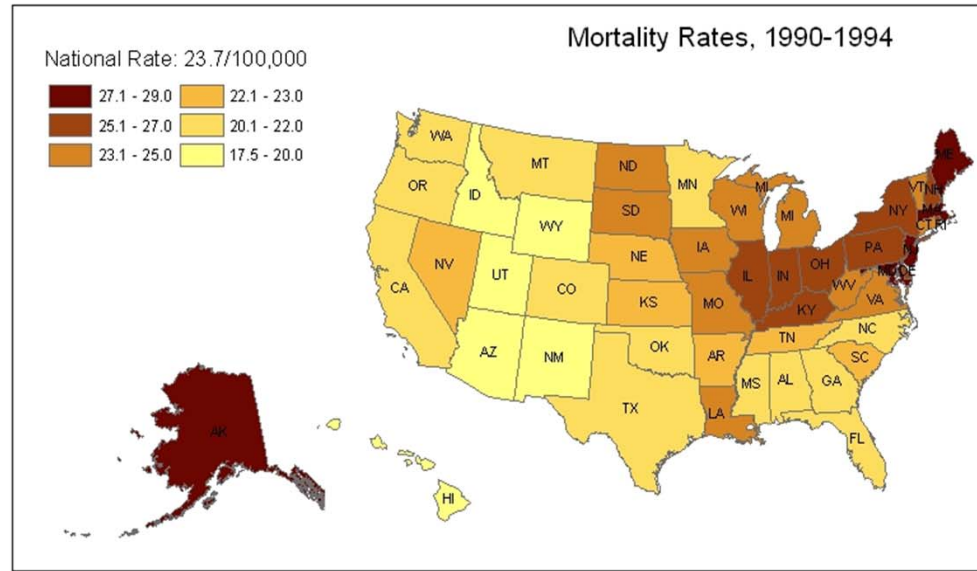
Similar pattern observed in the change in death rates between 1990-94 and 2003-07

State	Mortality Rate 1990-94	Mortality Rate 2003-07	Rate Ratios (95% CI)
Massachusetts	27.5	17.4	0.63 (0.61,0.65)
Rhode Island	26.3	17.1	0.65 (0.60,0.70)
New York	26.4	17.4	0.66 (0.65,0.67)
Connecticut	24.1	16.1	0.67 (0.64,0.70)
Kentucky	26.1	20.8	0.80 (0.77,0.83)
West Virginia	24.8	21	0.85 (0.80,0.90)
Louisiana ^a	24.3	20.9	0.86 (0.82,0.90)
Alabama ^a	20.4	18.6	0.91 (0.87,0.95)
Mississippi ^a	21.1	20.3	0.96 (0.91,1.02)

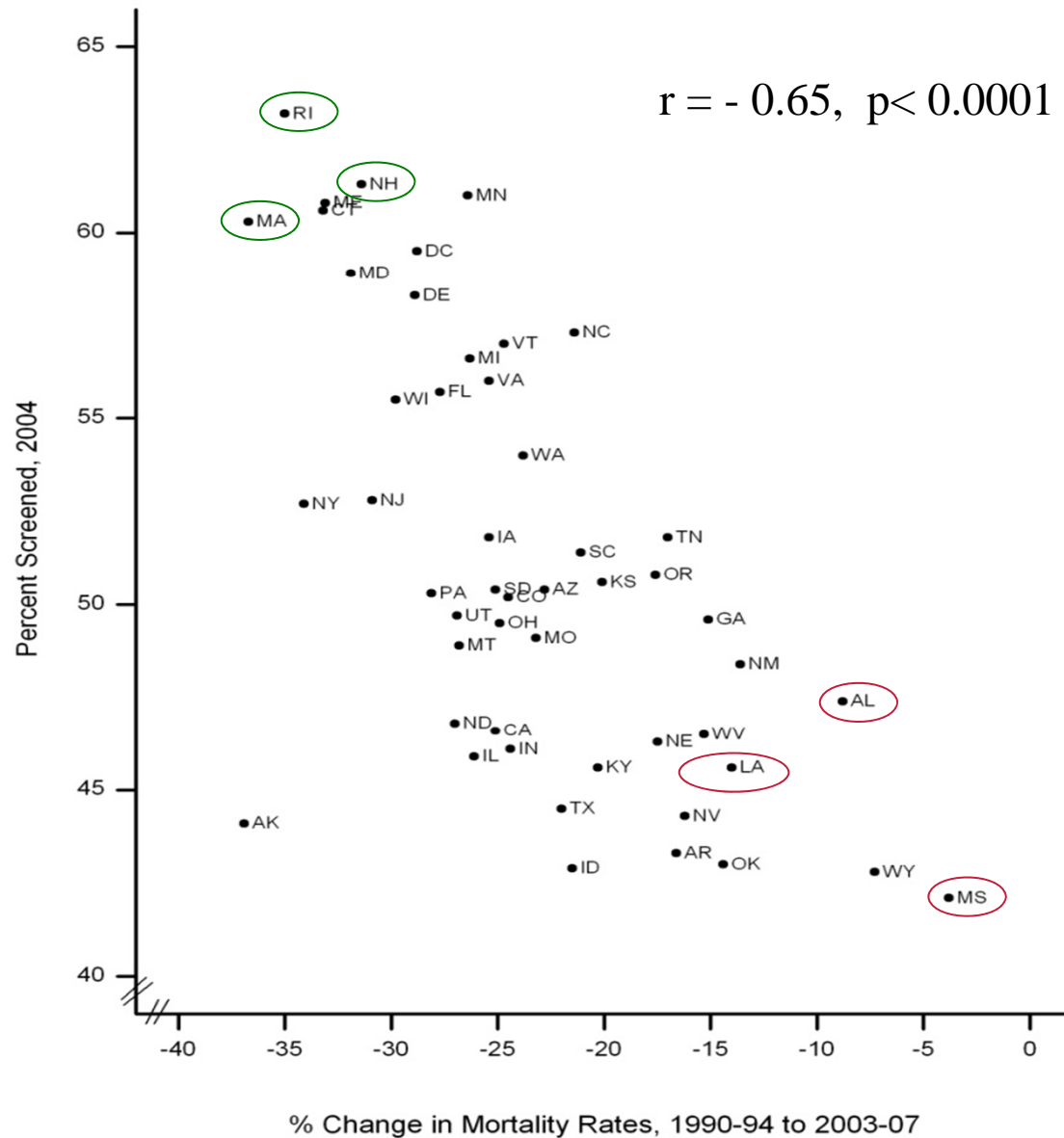
*Annual Percentage Change in trend significant at the 5% level of confidence. ^a States affected by Hurricane Katrina.

Source: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1990-2007) <Katrina/Rita Population Adjustment>, National Cancer Institute, DCCPS, Surveillance Research Program, Cancer Statistics Branch, released June 2010. Underlying mortality data provided by NCHS (www.cdc.gov/nchs). Mortality rate is per 100,000, age adjusted to the 2000 US standard population.

Geographic Variation



Correlation between % change in Mortality Rates (1990-94 to 2003-07) and % Screened for CRC (2004)





DISCUSSION:

**Factors contributing to state disparities in
CRC death rates:**

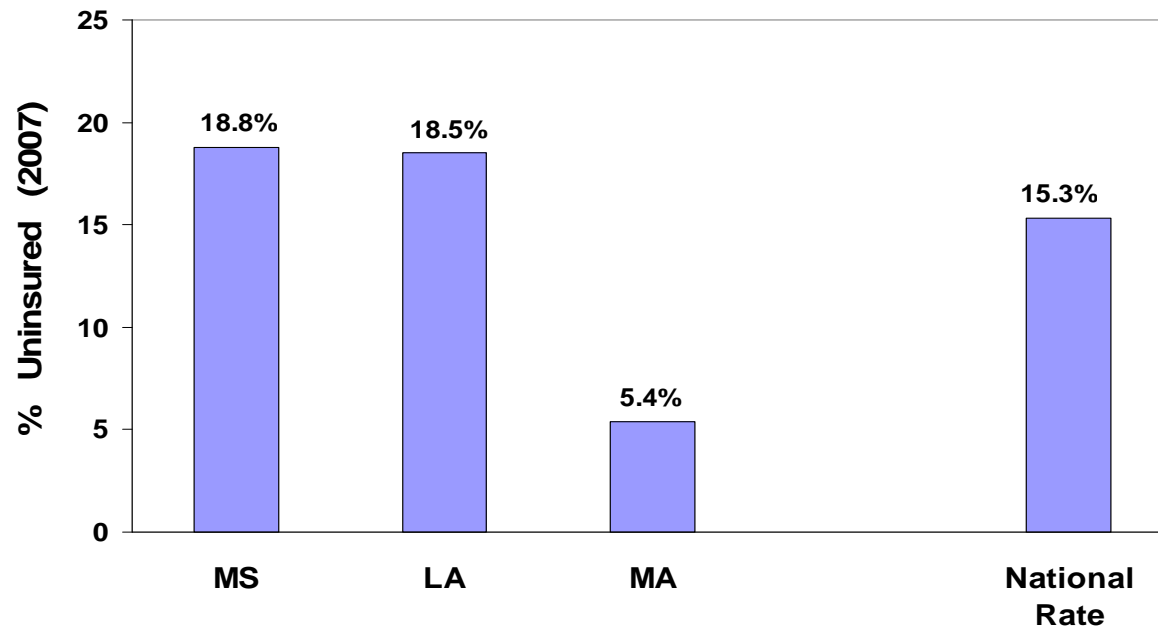
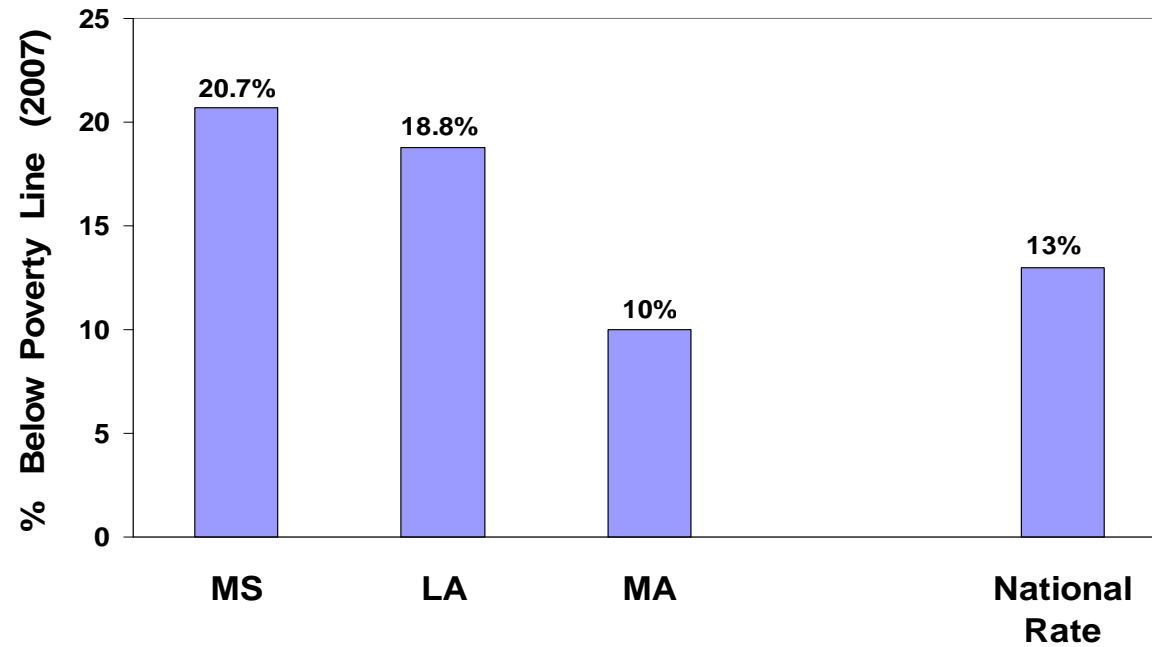
Risk factors and access to care


Obesity and smoking affect the trend in CRC mortality.

- Obesity is much higher in a majority of counties in the southern states of AL, LA, MS and TN among others, than in the northern states*
- According to BRFSS, smoking rates among adults are also much higher in the Southern states with 28% of adult smokers in KY, 24% in MS and TN and 27% smokers in WV .

Source: * MMWR,2008

Access to care: Screening for CRC / Treatment Differences



- 
- Delay in getting screened and treated for CRC results in a higher proportion of late stage CRC cases observed in Southern states
 - Poorer outcomes
 - Southern states have a relatively large black population and this population group is associated with having
 - Lower socioeconomic status
 - Higher prevalence of obesity
 - Higher risk perception to interventions
 - Poorer screening rates

LIMITATIONS

- We can only speculate about factors contributing to state disparities in CRC mortality declines.
- Inaccuracies in underlying cause of death and in race/ethnicity classification in death certificates.
- Variations in the race/ethnicity composition among states

Conclusion

Progress in reducing CRC mortality rates varies significantly across states

- Northeastern states – most progress
- Southern states – least progress

- Highest burden of CRC mortality shifted from Northeast to Southern states along the Appalachian corridor -- from 1990-94 to 2003-07.

- Need for wider dissemination of CRC screening to decrease high burden of CRC deaths.

Acknowledgements

- **Ahmedin Jemal, PhD**
- **Iris Lansdorp-Vogelaar, PhD**
- **Rebecca Siegel, MPH**
- **Vilma Cokkinides, PhD**
- **Priti Bandi, MS**



THANK YOU