

The Impact of Liver Redistricting Access
Consequences for Minorities &
Income Restricted Candidates

A Perspective from South Carolina

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Goals of the Talk

- LSAM Modeling Data on Ethnicity
- South Carolina (Population, Substantially Rural)
 - Racial disparity
 - Lower social economic status
 - Higher death rates from liver disease –
 - In hospital pre-transplant listing
 - Higher death rates from the transplant waiting list

LSAM Modeling on Ethnicity

	% white	% black	% hispanic	% other
Share 35	69.2%	10.9%	14.0%	5.9%
Regional	69.0%	10.9%	14.0%	6.1%
8 district	68.0%	11.1%	14.5%	6.3%
4 district	67.6%	11.4%	14.7%	6.3%

- Absence of significant change for blacks ($p=.28$), or for other cohorts ($p=0.08$)
- Percent of transplanted candidates who are white will decrease ($p<0.001$) while the percentage of hispanic candidates who are transplanted will increase ($p=0.02$)

LSAM Modeling interpretation

- There are many optimized maps suggesting significant reductions to the variance in median MELD scores at transplant, with concomitant reductions in deaths from those on waitlists.
- Minority candidates are predicted to have equivalent or increased rates of transplantation using optimized maps.
- Implementing one of these redistricting maps will significantly improve geographic equity compared with either local-first allocation or regional sharing with the existing regions.

Medical University of South Carolina (MUSC)

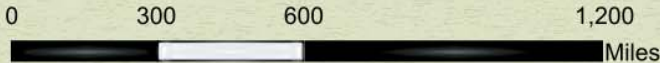
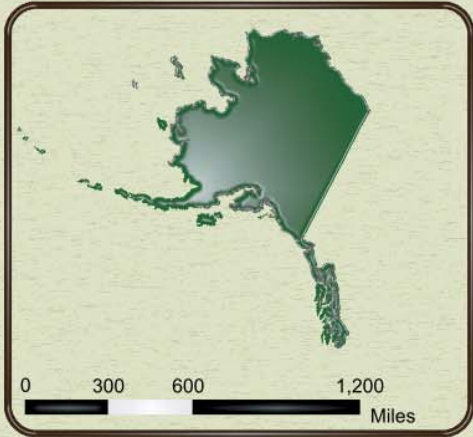
- First Kidney Transplant performed 1968
- First Liver Transplant performed 1991
- All Solid organs now performed at MUSC
- Over 1200 Liver Transplants since inception
- Only Transplant Center serving the citizens of South Carolina



South Carolina

- Rural state with population of 4.8 million
- Blacks make up 27.9 % of our population while only 13.2 % for the USA
- Per capita income \$23,906 vs. \$28,251

Median Household Income of the United States (2011)

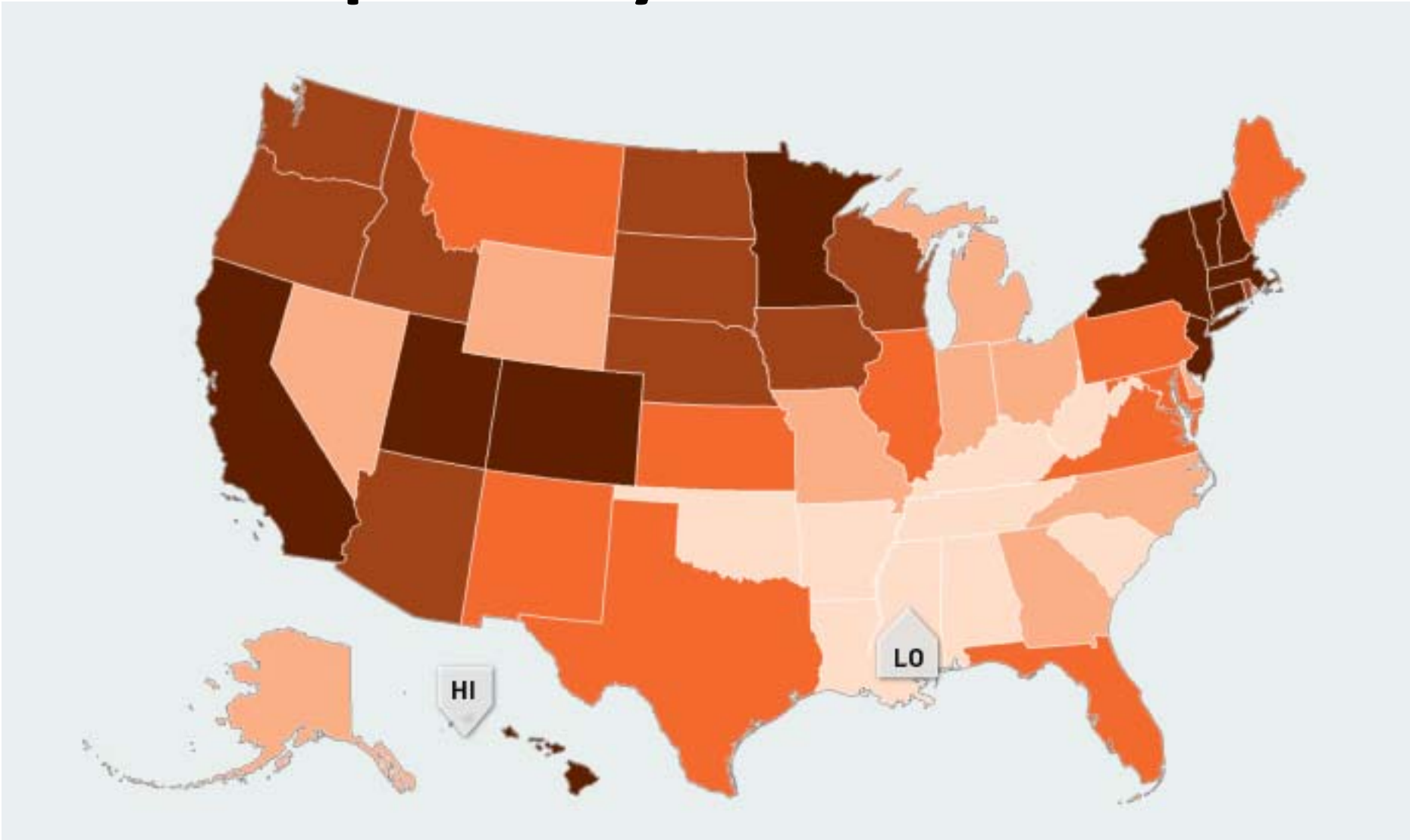


Lambert Conformal Conic
Central Meridian:
96 West
Standard Parallels:
33 North
45 North
By: Kyle Shimer
Source: Fact2finder.census.gov

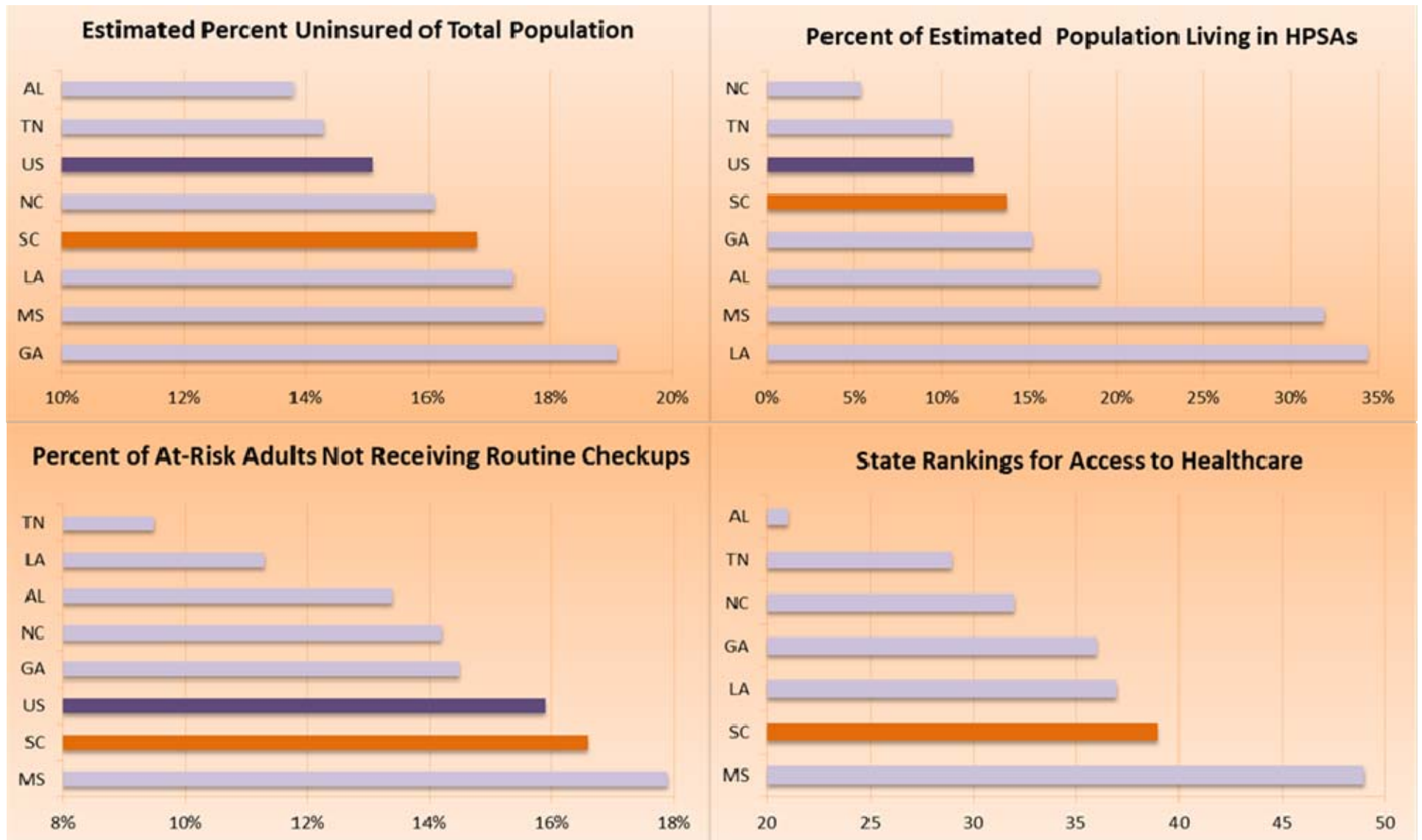
Health Status in South Carolina:

- Life expectancy of a South Carolinian is 76.6 years; which is two full years lower than the national expectancy of 78.6.⁴
- The infant mortality rate in SC is **7.1** per 1000 live births, compared to a national average of 6.4.³
- Only 66.7% of pregnant women in SC receive prenatal care in the first trimester compared to 82.3% nationally, which probably contributes to the fact that 14.3% of births in 2008 were pre-term, compared to 12.3% nationally.⁴
- Overall, 10.7% of SC adults have been told by a doctor that they have diabetes, compared to 8.7% across the US.⁴
- The rate of death caused by stroke or other cerebrovascular diseases per 100,000 was 53.4 among South Carolinians in 2007, compared to a rate of 42.2 nationally.⁴

Life Expectancy in South Carolina

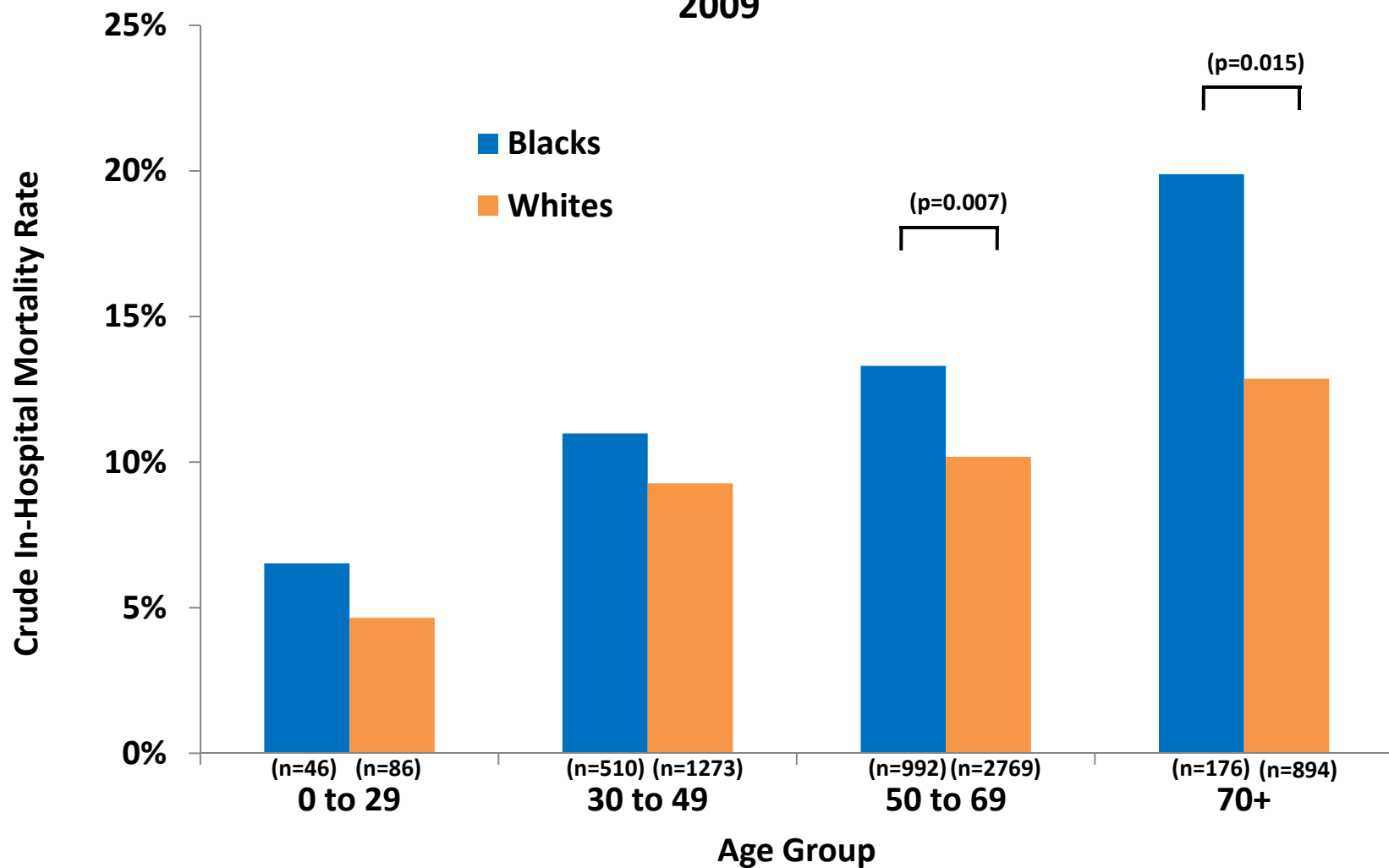


Health Status in South Carolina:



Data Source: Kaiser Family Foundation, State Health Facts.org website Rankings: larger numbers = poorer access

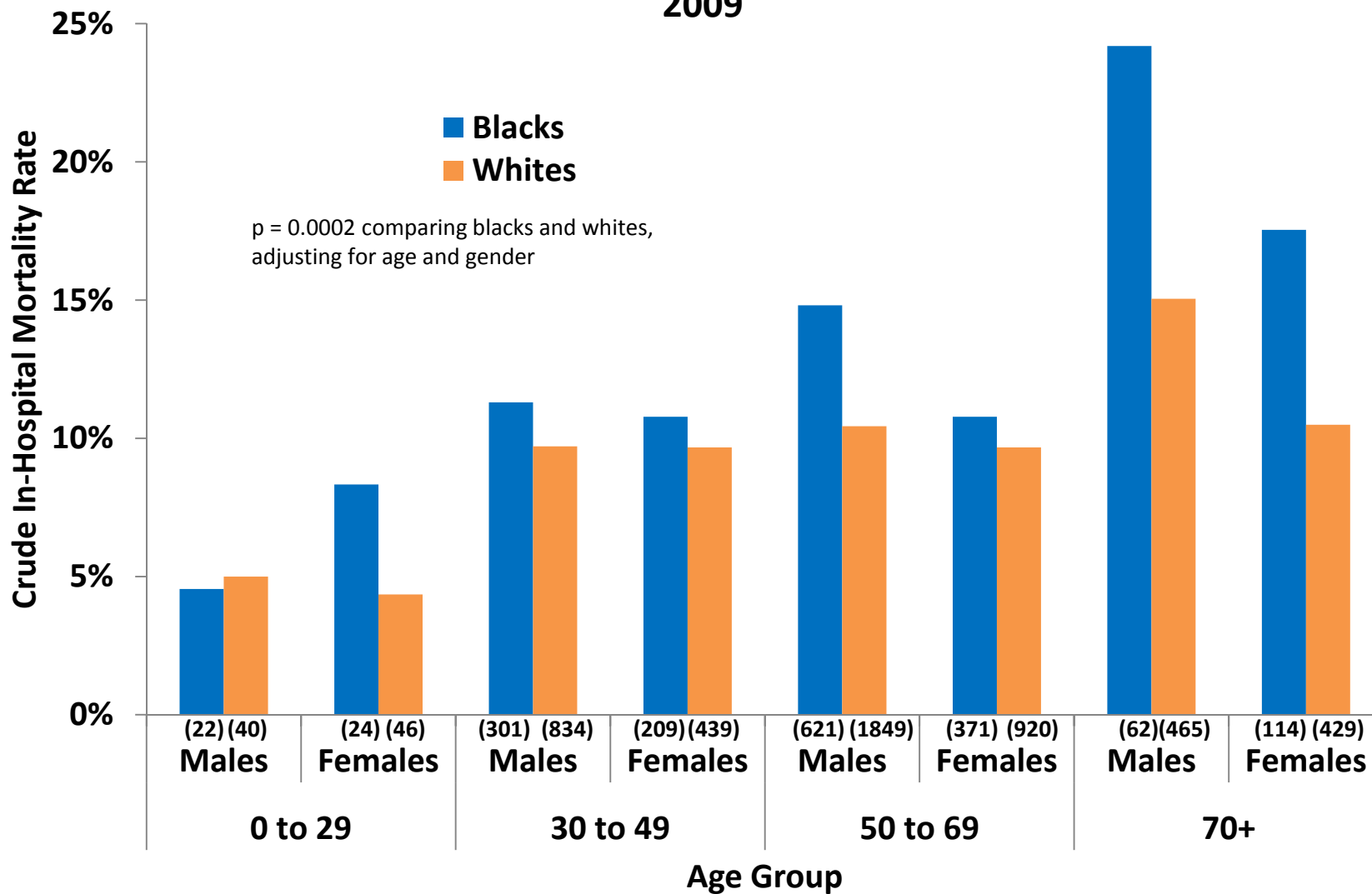
Racial Disparities in Unadjusted In-Hospital Mortality Rates Among Patients with Liver Disease in all South Carolina Hospitals: 2007- 2009



(Denominators are listed in parentheses below the bars.)

SC Hospital Association

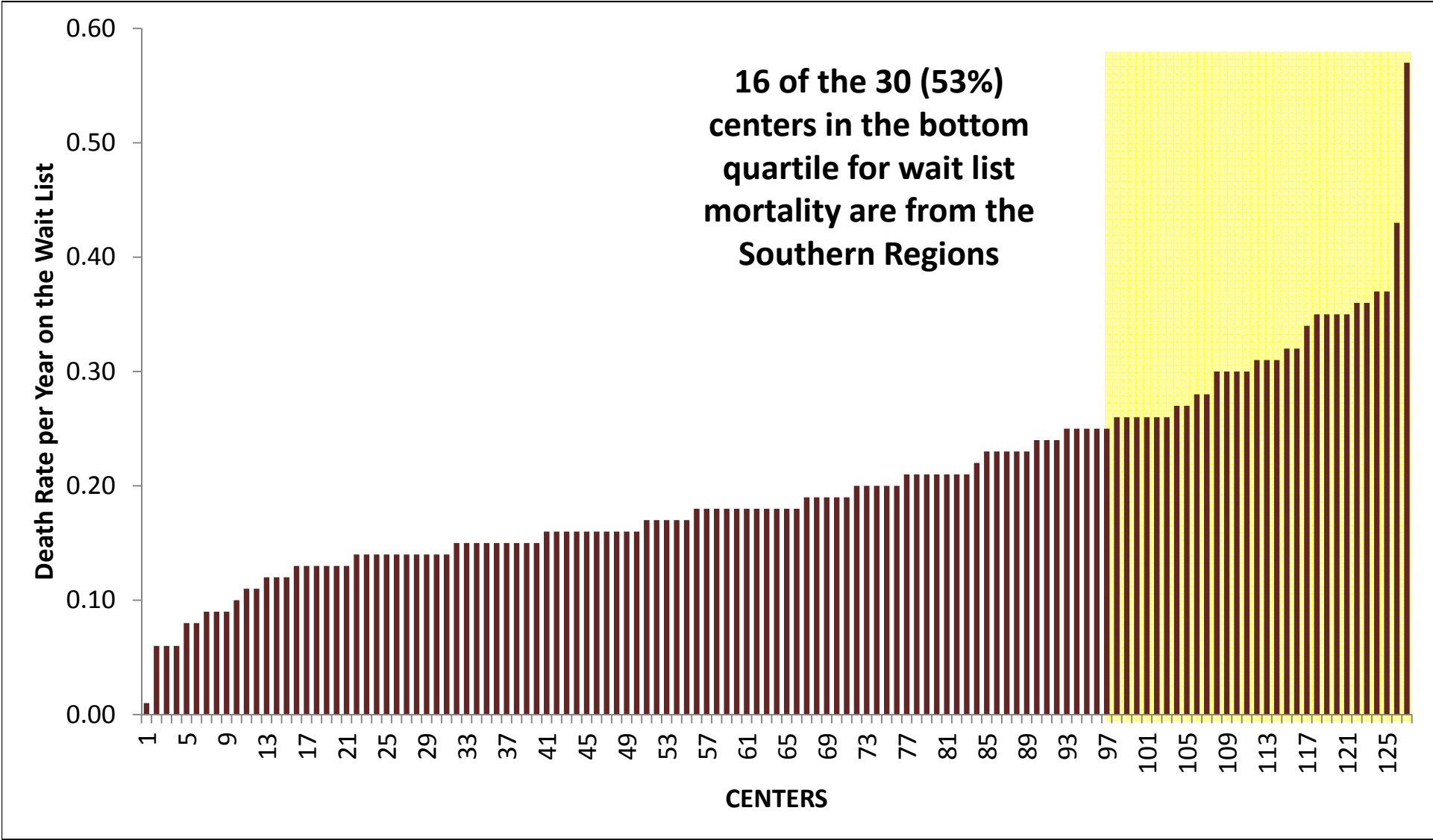
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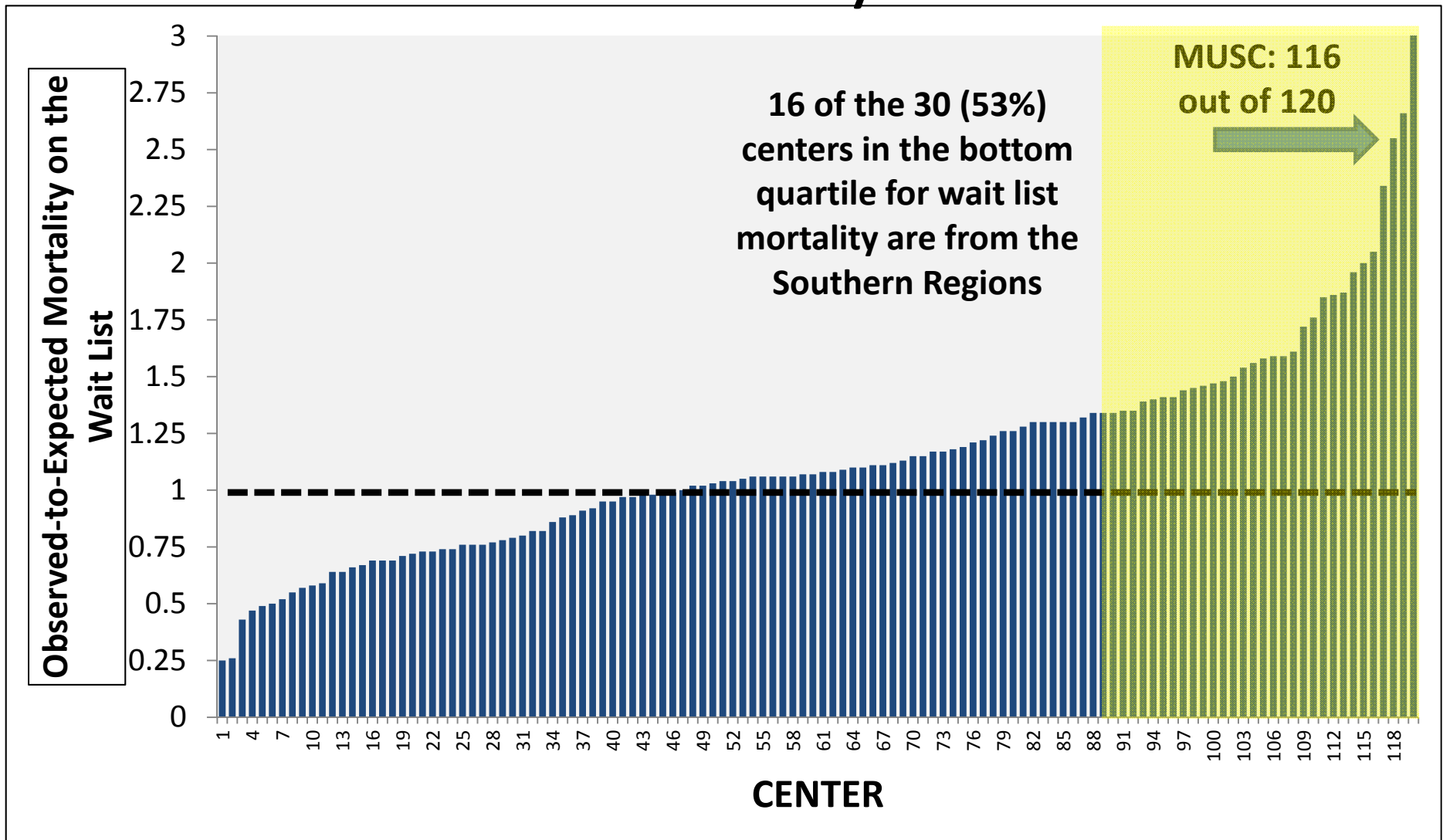
(Denominators are listed in parentheses below the bars.)

SC Hospital Association

2013 SRTR Data: Mortality per Year on the Wait List



2013 SRTR Data: Wait List O/E Mortality



Summary

- ***LSAM Modeling Data on Ethnicity***
 - Fails to reflect the whole picture of *inequity*
- South Carolina –represents similar states of the south east
 - Racial disparity and Low social economic status are widely present
 - Higher in hospital death rates from liver disease (this includes pre-listed and patients on the waiting list)
- Despite Lower MELDS at Transplant, SC and programs with similar racial and economic demographics are in the lowest quartile in SRTR wait list mortality

Conclusions

- Redistricting will further aggravate and increase disparities amongst minorities with respect to access to healthcare resulting in increase deaths from liver disease while patients await transplant
- Redistricting will threaten programs which serve minority and under represented populations thereby increasing disadvantages amongst this group of patients

George E. P. Box FRC

- The father of statistical Modeling
- His name is associated with results in statistics such as: [Box–Jenkins models, Box–Cox transformations, Box–Behnken designs, and others](#)
- Box wrote in his book on response surface methodology with Norman R. Draper **"essentially, all models are wrong, but some are useful"**

Are we using the appropriate metrics to model when the guru (Dr. Box) suggests Modeling is only a tool ?

Modeling operates by changing one variable and all other factors staying the same

Final Question

- If we, as a transplant community, have an unlimited number of organs to transplant, would we distribute them all over the country or would we first use them locally?