South Carolina Statewide Cancer Prevention & Control Program

Breast Cancer Survival Analysis among Economically Disadvantaged Women:

UNIVERSITY OF SOUTH CAROLINA

The Influences of Delayed Diagnosis and Treatment on Mortality

Emily Smith, MSPH
Swann Arp Adams, Ph.D.
Irene Prabhu-Das, Ph.D.
James R. Hebert, Sc.D.

SOUTH CAROLINA
Cancer Disparities Community Network

The Journal
Cancer Disparities in South Carolina
Volume 102, Number 7 Pages 171-262 August 2006

The Journal
OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

since 1905

VOLUME 102
NUMBER 7
August 2006
PAGES 171-262

Cancer Disparities in SC

Epidemiology and prevention of the seven cancers of most critical importance in South Carolina: Breast, Cervix, Colon, Esophagus, Lung, Oral Cavity, and Prostate.

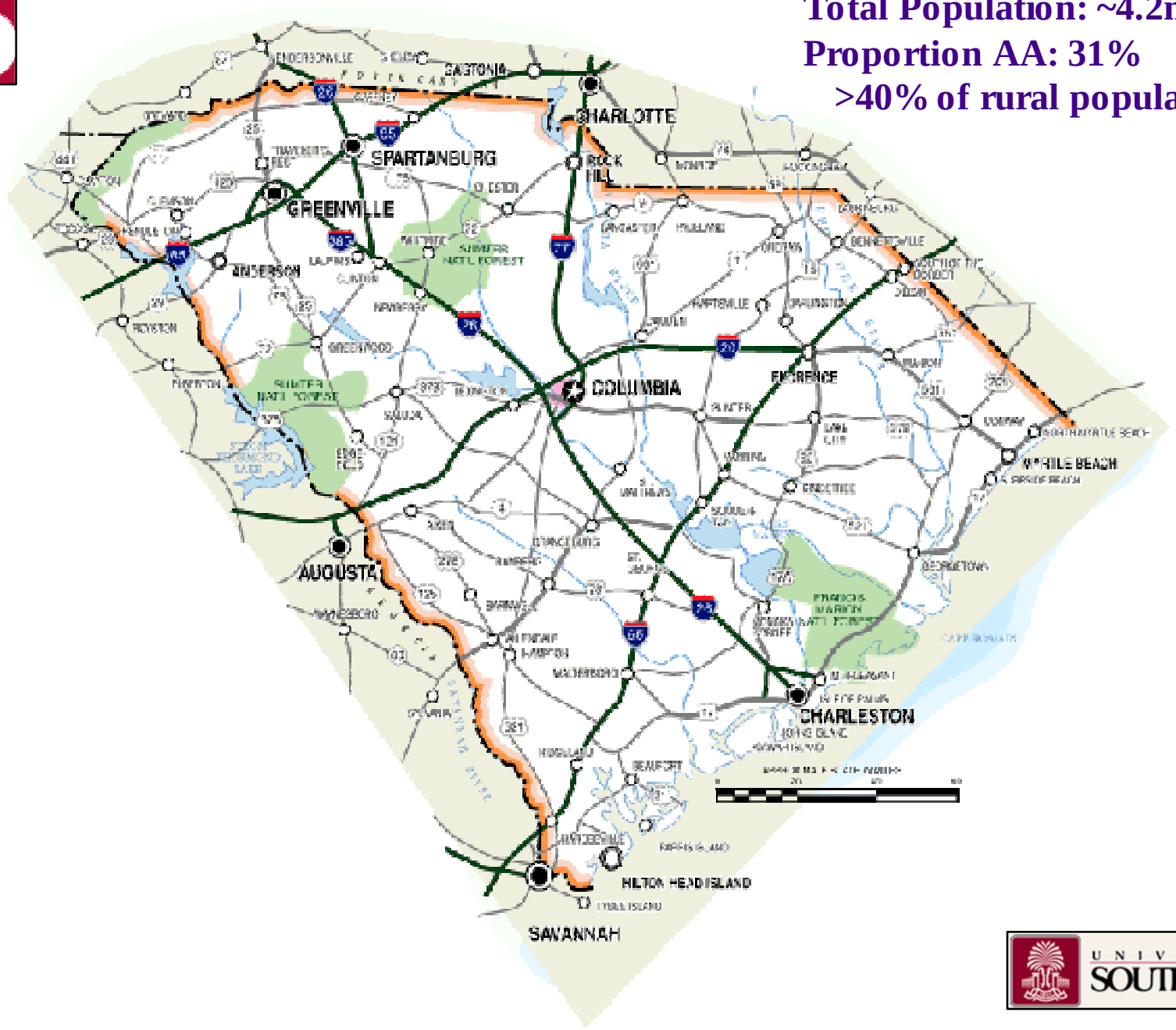
This issue presents results of collaborations among the SC Statewide Cancer Prevention and Control Program at the University of South Carolina, the SC Cancer Disparities Community Network, the SC Central Cancer Registry, the SC Cancer Alliance, and their partners.

SOUTH CAROLINA CANCER ALLIANCE
SCCA

DHEC
PROMOTE PROTECT PROSPER

Here we are …

Total Area: 31,113 mi^2
Total Population: ~4.2m
Proportion AA: 31%
>40% of rural population is AA

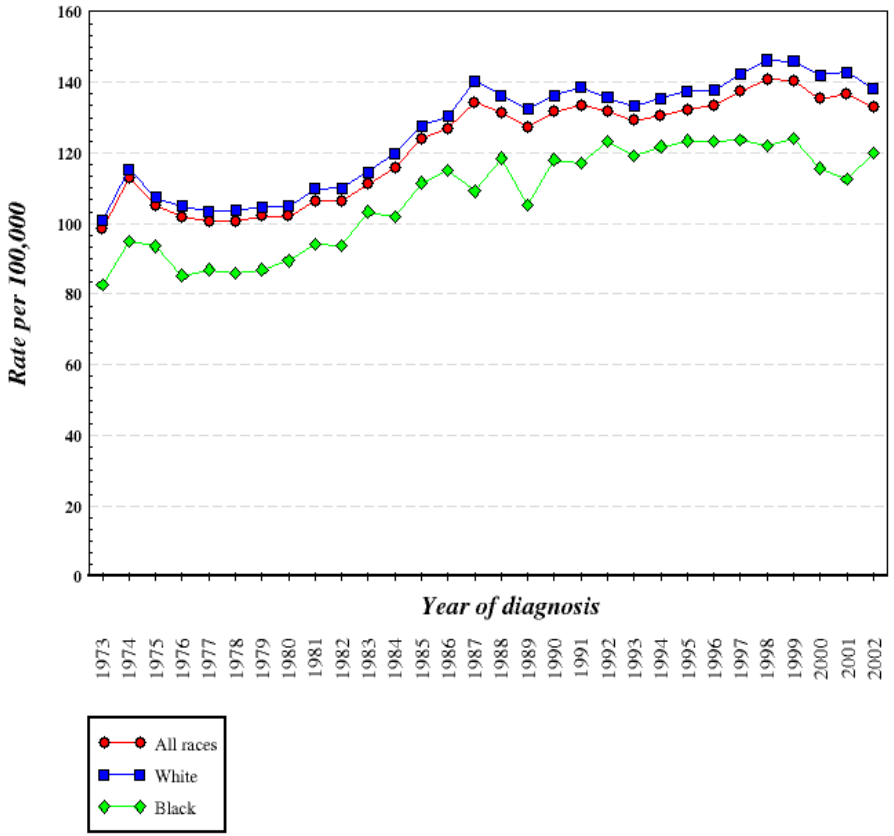


UNIVERSITY OF SOUTH CAROLINA

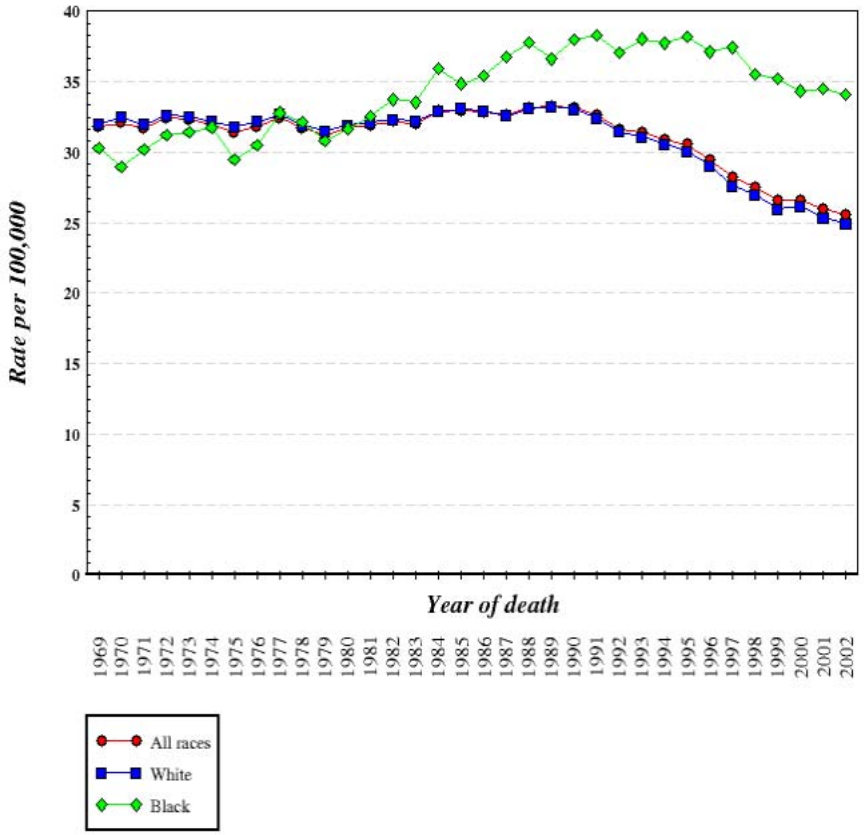
Statement of the Problem

National Level

Incidence
1975-2002



Mortality
1975-2002



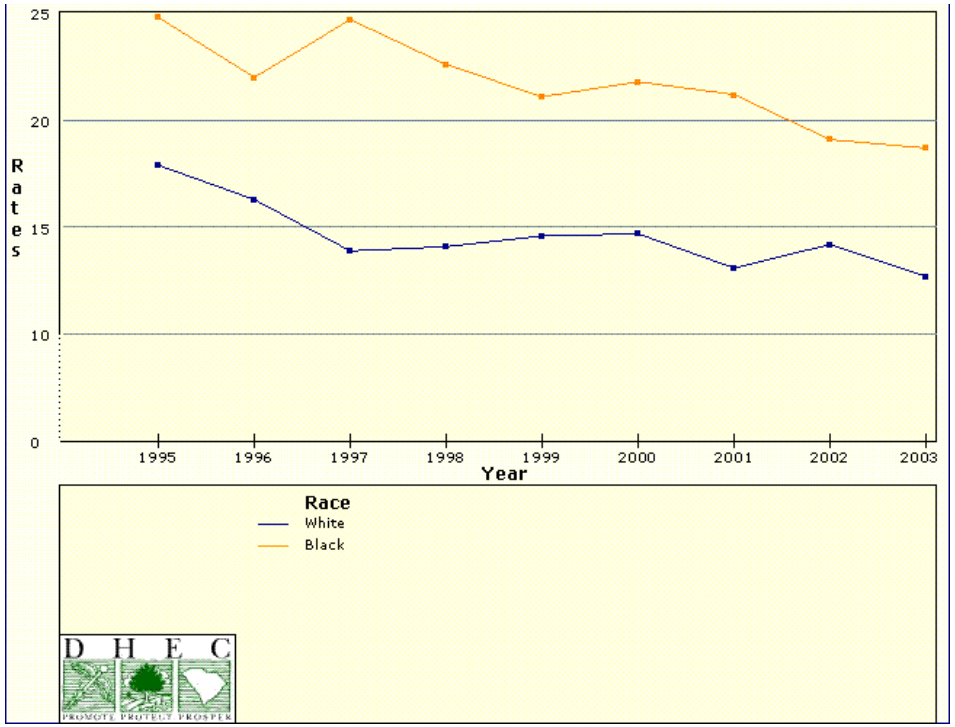
Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Edwards BK. Cancer Statistics Review 1975-2002. 2005. Bethesda, MD, National Cancer Institute.

Statement of the Problem

South Carolina Perspective

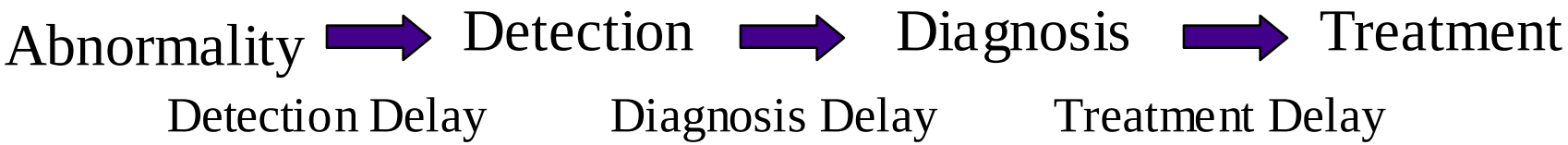
Incidence
1996-2002

Mortality
1996-2002



South Carolina Central Cancer Registry: Department of Health and Environmental Control. SCAN.
For South Carolina Residents: Age Adjusted Rates
2000 US Standard Populations

Specific Aims



Are to describe and compare the:

- distribution of tumor characteristics by race (AA vs. EA)
- pattern of diagnosis delay by race
- treatment delay by race
- relationship between mortality and diagnosis and treatment delay intervals, by race, after adjusting for traditional risk factors

Methods

Participants:

- 342 AA or EA women participating in SC's Breast & Cervical Cancer Screening Pgm, the Best Chance Network (BCN)
- 19 women excluded with incomplete follow-up; 6 of other race

Covariates:

- From BCN – Age, Income
- From SCCR – Tumor Stage, Grade, Behavior, ER/PR status

Statistical analysis:

- Simple Univariate, Descriptive
- Cox Proportional Hazards

Demographic & Tumor Characteristics

Demographic Characteristics	AA (n=164)	EA (n=150)
Income	$3,682 ($5,539)	$5,434 ($6,491)
Age at abnormality detection	55 (8.5)	55 (8.0)
Tumor behavior (*In-situ*)	14%	11%
Poorly /Undifferentiated	44%	40%
Regional/Distant Spread	46%	40%
ER/PR Status +/+	27%	34%

Summary of Detection, Interval and Outcome Data

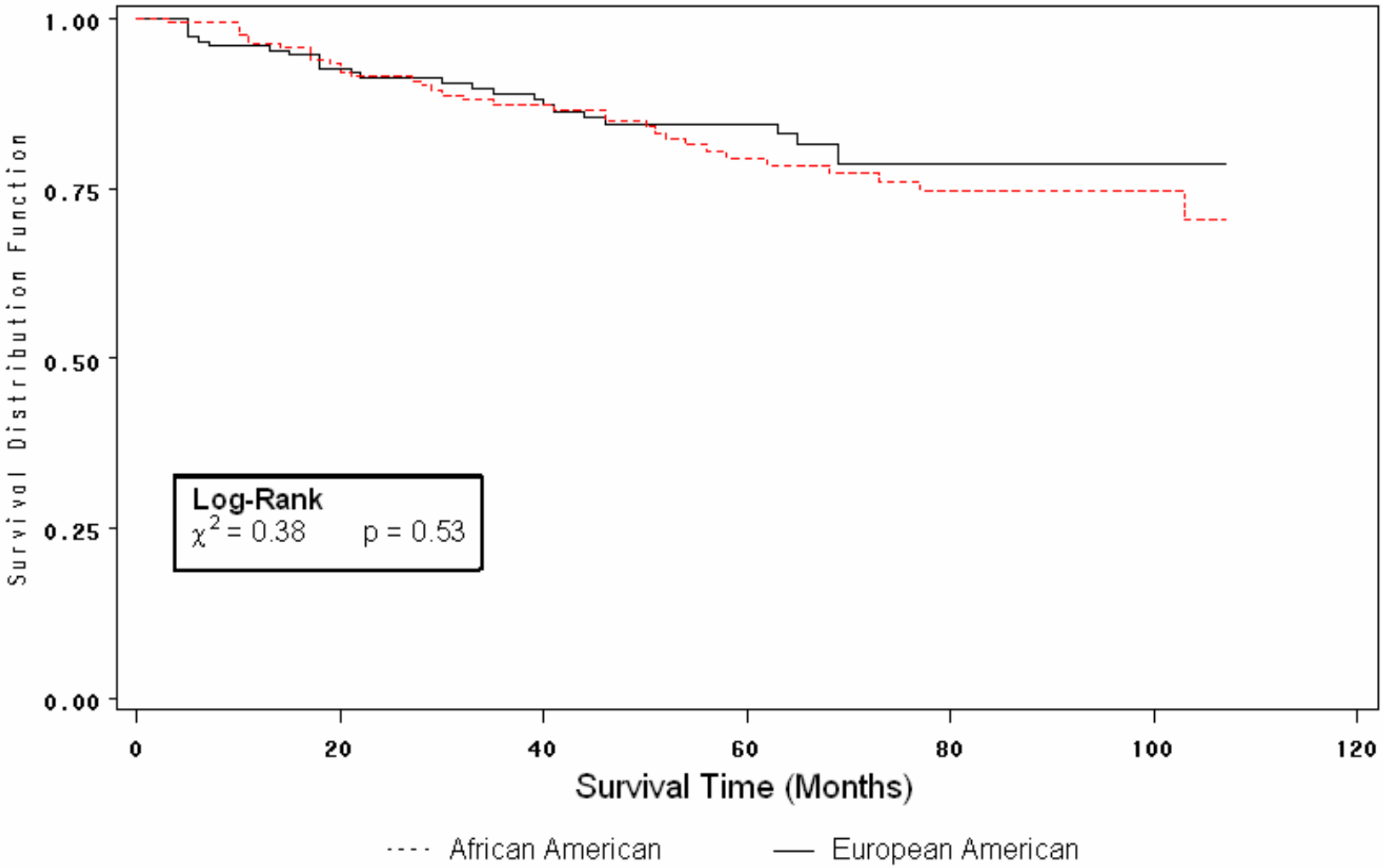
- No Significant Difference in Method of Detection by Race
- Total Interval (Time from First Abnormal Screening to Treatment Initiation (Days) was longer in AA (65) than EA (54) (p=0.04)
- 39 EA women died, 34 of BrCA
- 34 AA women died, 25 of BrCA

Cox Model Results: Factors Influencing All-Cause Survival (BCN, 1996-2004)

Variables	Hazards Ratio	95% CI	p-value
Diagnosis delay	1.00	0.99, 1.01	0.98
Treatment delay	1.00	0.98, 1.01	0.38
Race (AA vs. EA)	3.85	1.13, 13.20	0.03
Regional/Distant (vs. Local)	3.68	2.18, 6.25	<0.0001
ER/PR (-/- vs. +/+)	4.78	2.28, 10.07	<0.0001
ER/PR +/- (or) -/+	4.28	1.41, 12.98	0.02
ER/PR (unknown)	3.44	1.32, 9.01	0.01
Race*ER/PR (EA +/+ vs. Others)	0.59	0.39, 0.90	0.02

Breast Cancer Specific-Survival Analysis 1996 – 2004

By Race



Cox Model Results: Factors Influencing BrCA-Specific Survival (BCN, 1996-2004)

Variables	Hazards Ratio	95% CI	p-value
Diagnosis delay	1.00	0.98, 1.00	0.15
Treatment delay	1.00	0.98, 1.01	0.39
Race (AA vs. EA)	3.15	0.81, 12.26	0.09
Regional/Distant (vs. Local)	4.50	2.46, 8.36	<0.0001
ER/PR (-/- vs. +/+)	5.02	2.22, 11.38	0.0001
ER/PR +/- (or) -/+	2.45	0.60, 10.04	0.21
ER/PR (unknown)	3.19	1.08, 9.47	0.03
Race*ER/PR (EA +/+ vs. Others)	0.68	0.43, 1.10	0.11

Discussion and Conclusion

Overall:

- No apparent effect of delay for either all-cause or BrCA- specific mortality
- No affect of tumor grade, after accounting for stage
- No racial difference in terms of method of detection

Significant factors affecting overall mortality:

- Race
- Stage
- ER/PR status
- ER/PR * race

Results were similar for BrCA mortality except:

Race and ER/PR-by-Race interaction did not achieve statistical significance – possible numbers problem