

Relationship of Community
Level Socioeconomic Status
and Stage at Diagnosis of
Colorectal Cancer in Florida

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Florida Cancer Data System

Colorectal Cancer

- Common cancer in industrialized world
 - High incidence; high mortality
- Risk Factors
 - Diet, obesity, exercise, smoking,
 - supplements (HRT, aspirin, Vit D reduce risk)
 - Pre-existing conditions (bowel inflammation, genetic predisposition, diabetes)
 - Social factors (education and income level, race/ethnicity and sex, place of residence)

Colorectal Cancer Screening

- Screening and early detection
 - Most important for survival
- Multiple tests/Recommendations
 - Lack of national consensus
- Reduce mortality
- Reduce incidence
 - Secondary prevention; colonoscopy

Socioeconomic Status

- Mortality and morbidity
 - Disparities documented since ancient civilizations forward
 - Not explainable by genetic or behavioral risk factors alone
- Cancer Disparities
 - Greatest disparities for cancers with good prognosis (if dx at early stage)
 - Stage at diagnosis, Screening

Socioeconomic Status

- Concept of social class
 - Social relationship; multi-level (person, family, community)
 - No single link between social class and health
 - Variety of interconnected pathways
 - Influences all stages of life
 - Social construct
 - Temporal, complex, “organic”
- Occupation, income, and education
 - Race/ethnicity as surrogate
 - Poverty and degree of income inequality

Area Based Measures

- Rationale
 - Majority of SES and health research conducted outside the US
 - Individual level data not collected
 - Community level socioeconomic status
 - Surrogate for individual SES
 - Stand alone health predictor
- Utility
 - Use GIS to link disparate data sources based on geography
 - Free, easily accessible data sources
 - US Census
- Community based risk; Population based health
 - Crux of public health epidemiology

Study Objective

- Evaluate the influence of community level SES (poverty) on the stage at diagnosis of colorectal cancer
- Hypothesis
 - Increasing poverty is associated with an increased risk of a colorectal cancer being diagnosed at a late stage

Study Methods

- Ecological, population based
- Block Group level data aggregated by SES level
- Stratified analysis
 - Sex, Race, Ethnicity, Urban/Rural

Study Methods

- Florida Cancer Data System
 - Legal mandate
 - Contract held at University of Miami
 - 1978
 - Reference year 1981
 - 96,000 incident cases annually
 - NAACCR Certified
 - Every data year included in study

Study Methods

- Case Selection
 - Aggregated years 1998-2002
 - To align with 2000 Census data
 - Age 50+
 - Primary CRC
 - Previous dx of cancer ok
 - no DCO, no autopsy unless CRC COD
 - Adenocarcinomas only

Study Methods

- Socioeconomic Status
 - Single variable
 - % people living below poverty
 - US Census
 - 4 levels
- Urban/Rural Status
 - Single variable
 - % people living in urban area
 - US Census
 - Dichotomous variable

Study Methods

- Age-Adjusted Rates
 - Gamma confidence intervals
- Early and Late Stage IRR
 - Standard confidence intervals
 - Higher Early:Late Ratio

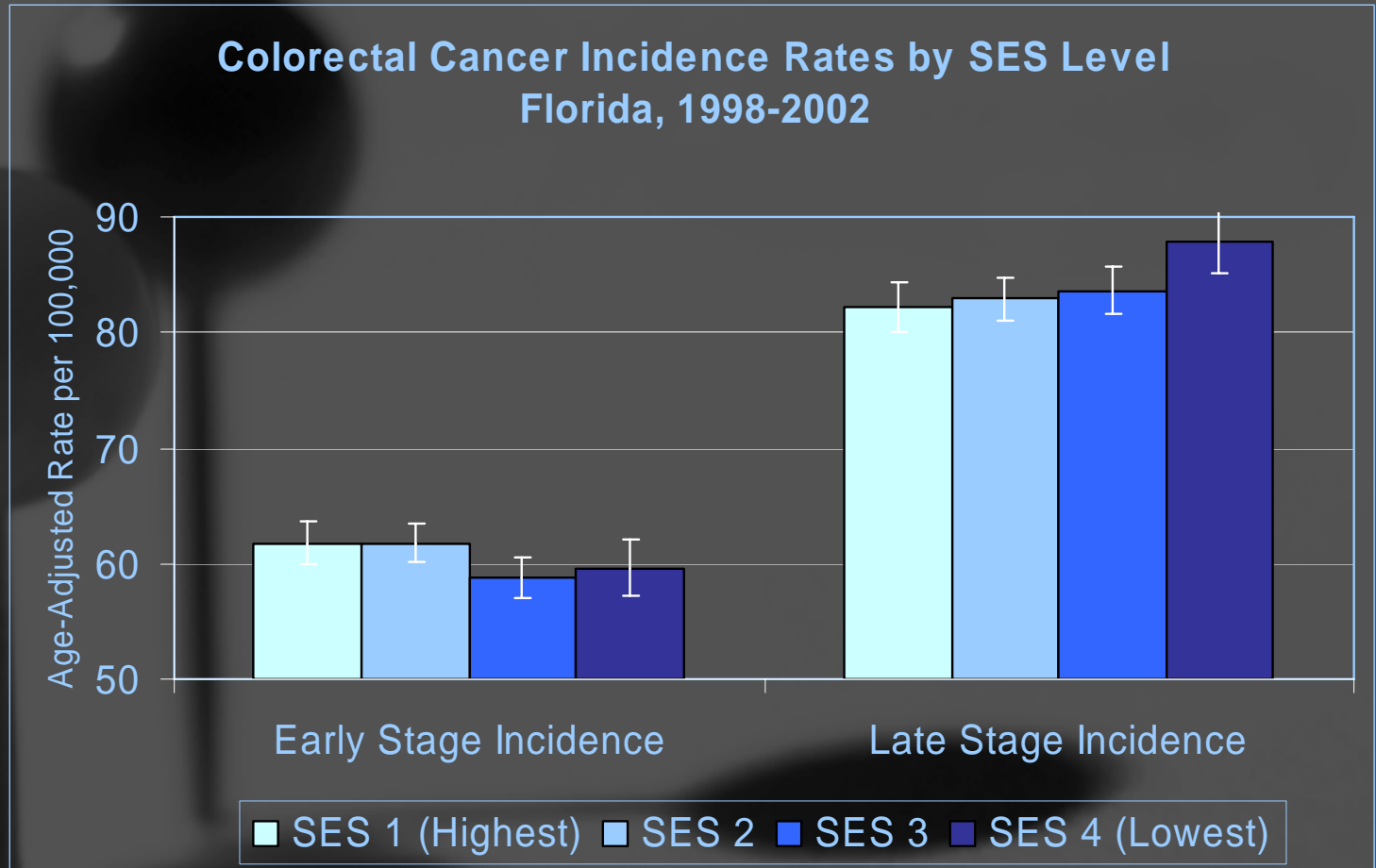
Study Methods

- Ratio of Early:Late
 - Incidence Rates
 - Delta confidence intervals
 - Accommodate for variation in risk of total CRC by SES
- Results shown as a ratio
 - Higher ratio
 - More early cases
 - Better prognosis
 - Lower ratio
 - More late cases
 - More risk of late stage diagnosis

Results

Case distribution by stage	Early		Late	
	Count	Percent*	Count	Percent*
Race				
Blacks	1,175	34%	1,806	52%
Whites	16,193	36%	21,996	50%
Ethnicity				
Hispanics	1,655	34%	2,516	52%
Non-Hispanic, Whites	14,514	37%	19,440	49%
* Percent based on total cases meeting criteria; including unknown stage and DCO cases; 18% of total cases				

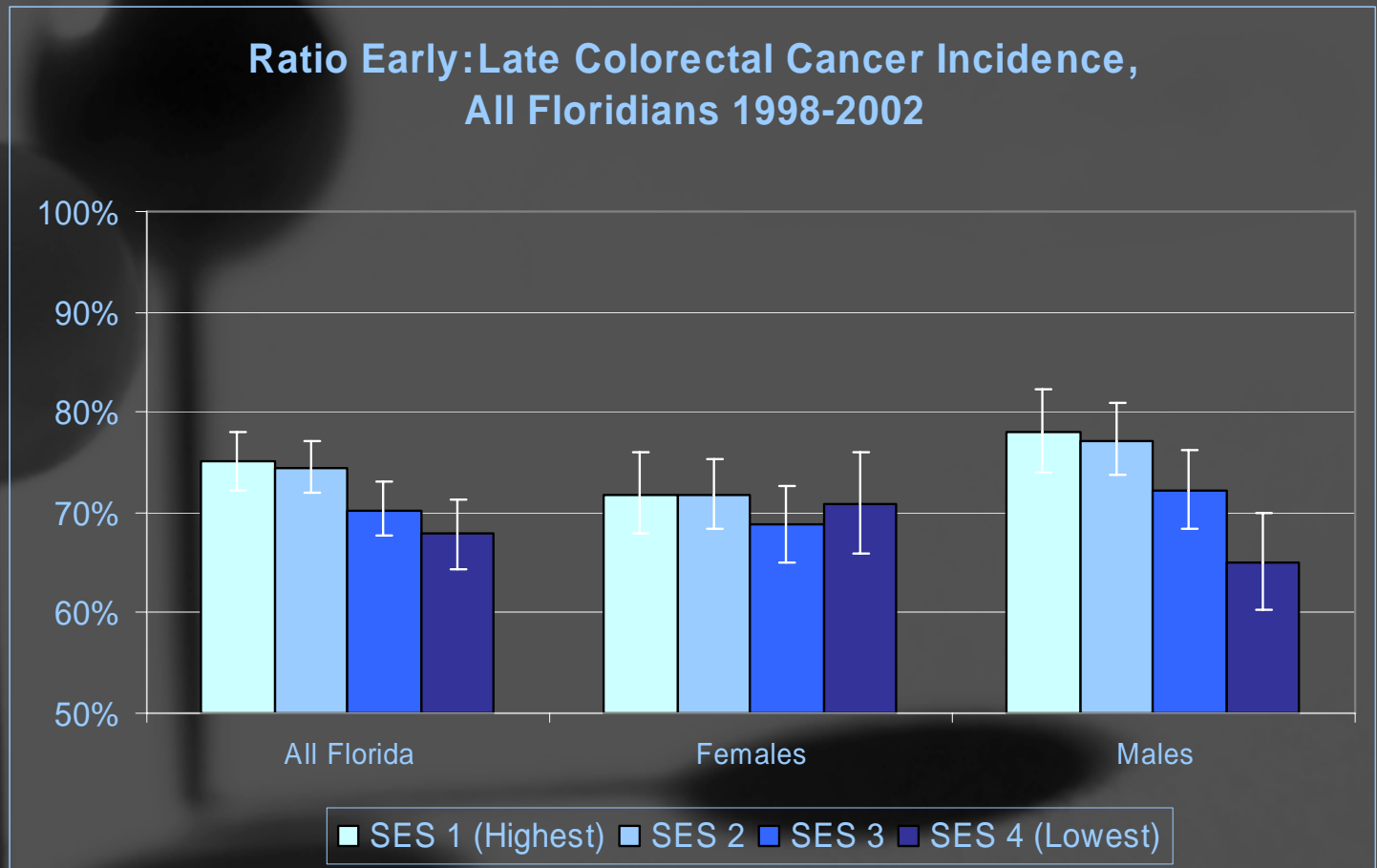
Results – Rates by SES



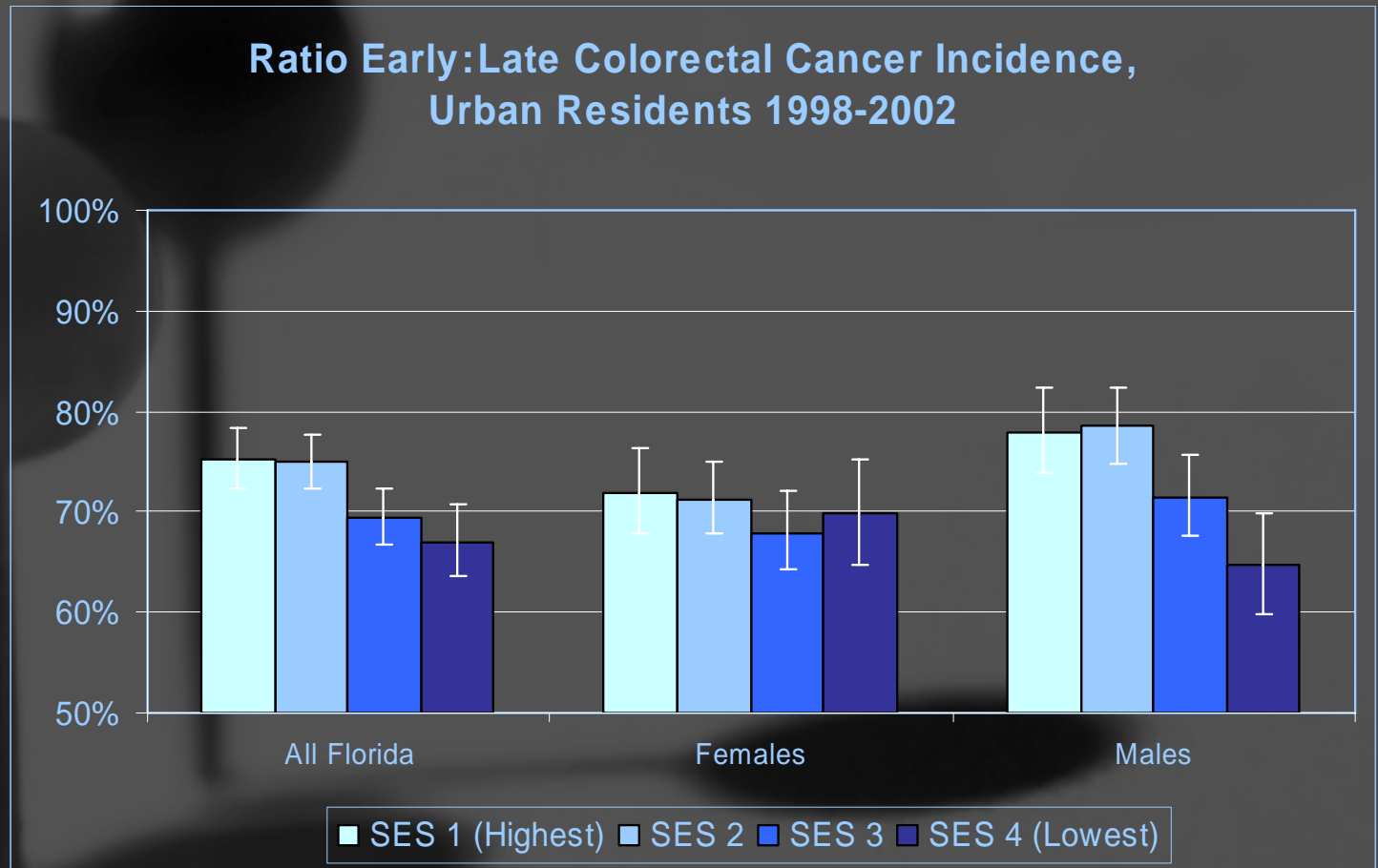
Results – Early:Late Ratio

- But incidence varies by SES
 - Increases by SES
 - All combined, White, Non-Hispanic White, Urban (combined)
 - Decreases by SES
 - Blacks, Hispanics, Rural (combined)
- Ratio of Early:Late Stage Incidence

Results – Early:Late Ratio by SES



Results – Early:Late Ratio by SES



Results – Early:Late Ratio by SES

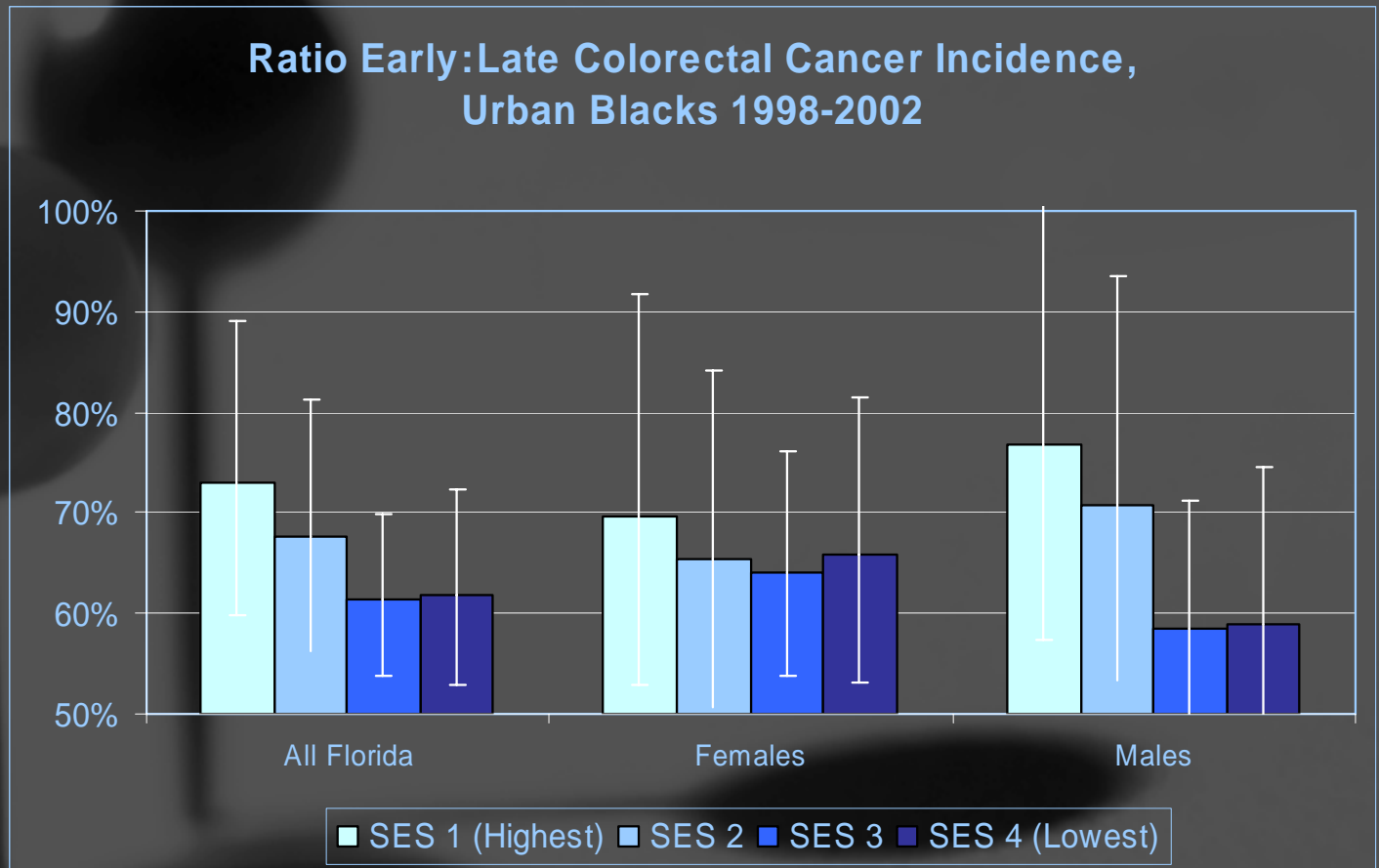
- No pattern
 - Hispanics
 - Blacks
 - Rural Residents
- Residual confounding?
 - Poverty?

Results

	Percent of Florida Population	Percent Living Below Poverty
All Floridians	100%	12.5%
Blacks	15%	25.9%
Whites	78%	9.5%
Hispanics	17%	18.0%
White, Non-Hispanics	65%	8.1%

Data from US Census 2000, based on single race reporting

Results – Early:Late Ratio by SES (Quartiles)



Study Summary

- Risk of late stage colorectal cancer at diagnosis increases with increasing poverty
 - Whites, Non-Hispanic Whites
 - Urban environments
 - Men
 - Blacks
 - Quartiles
- Hispanics, Rural
 - No discernable pattern

Discussion

- Non-linear trend (still decreasing)
 - Women, Blacks (adjusted),
 - Second lowest SES highest risk
 - Possibly due to health access behaviors
 - Poorest are Medicaid eligible
- Heterogeneity of Hispanics
 - Lack of BG level poverty data for race-specific Hispanic analysis

Discussion

- Lack of stage information (18%)
 - Hispanics
 - Rural
 - Increasing poverty = increasing % unknowns
- Other risk factors
- Accuracy of geocoding; Accuracy/Applicability of address at diagnosis
- Screening effect
 - Low incidence may reflect high screening
 - Precancerous diagnoses are removed
 - Potential inflation of risk

Study Conclusion

- Screening must be increased
 - poor communities may benefit the most
- The identification of neighborhoods of low SES is simple
 - free and readily available Census data
- Targeting poor communities for enhancing screening efforts should be incorporated into public health policy

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