

# DISPARITIES IN OUTCOMES FOR MAJOR SURGICAL ONCOLOGY PROCEDURES

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# **Racial Disparity in Surgical Mortality after Major Hepatectomy**

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# Background



- Major hepatectomy has generally become safer in the last several decades, especially in specialized hands.
- Racial disparities in surgical mortality have been documented for several other surgical procedures.

# Objective



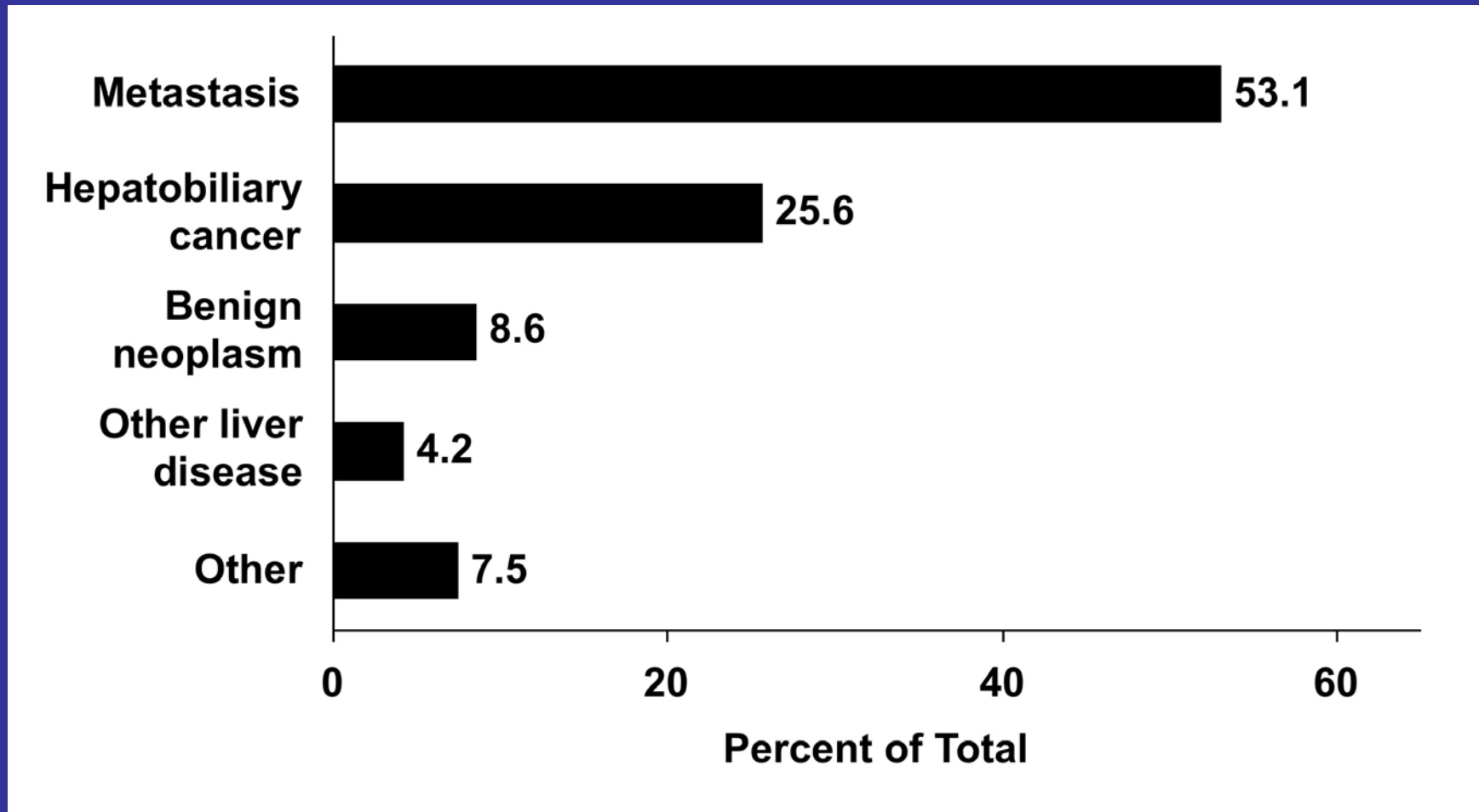
**To determine whether in-hospital mortality rates after major hepatectomy vary between racial groups.**

**To identify potential reasons for such disparities.**

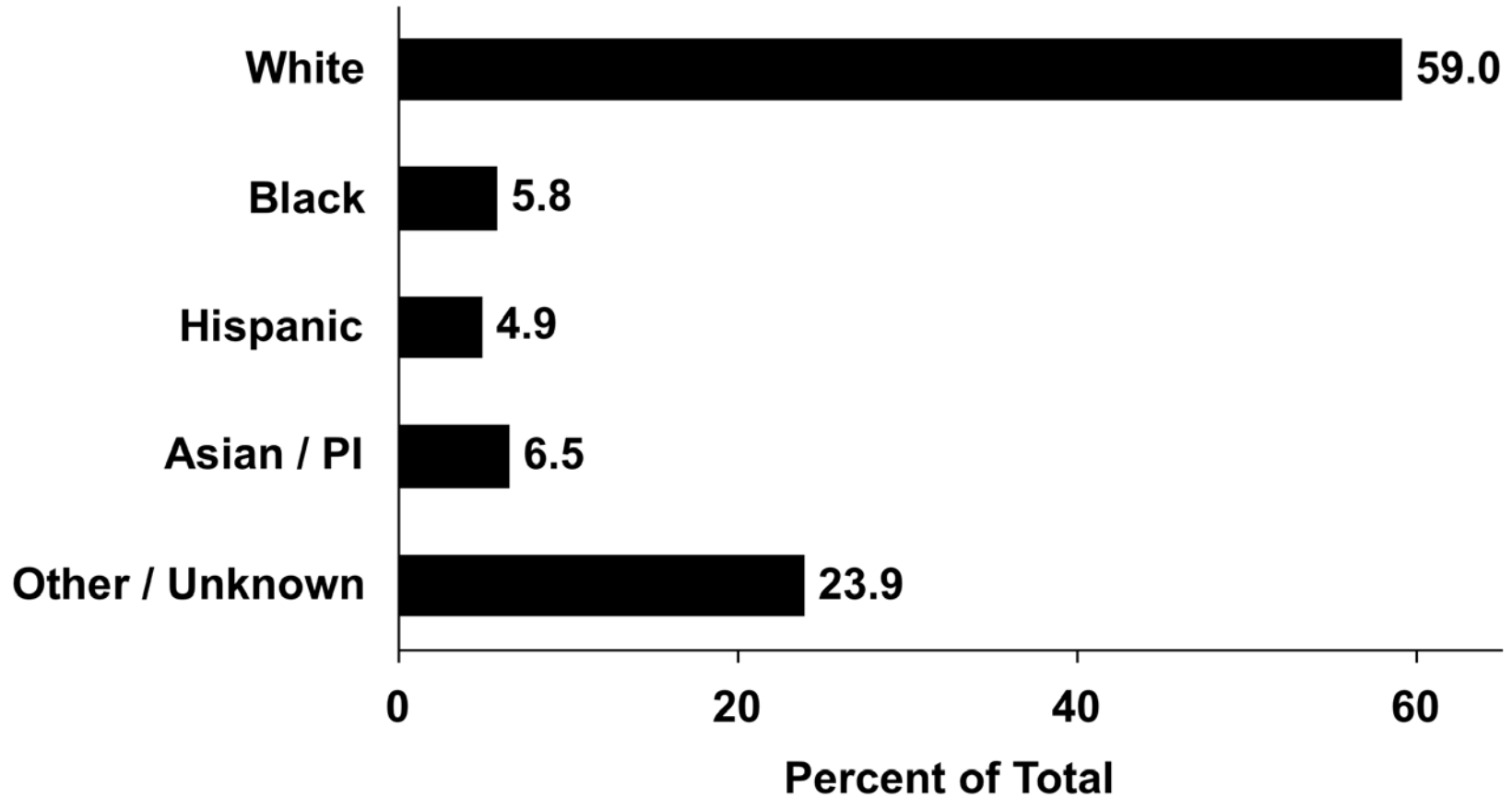


- **1998-2005 Nationwide Inpatient Sample**
- **Selection criteria**
  - **Age  $\geq 18$**
  - **Non-trauma admission**
  - **Primary procedure liver lobectomy (ICD9 50.3) within 1 day of admission**
- **Deyo-Charlson index with empiric weights**
- **Chi-squared analysis (svy: tab) and logistic regression (svy: logistic), Stata/MP 10.0**

# Results: Primary Diagnosis

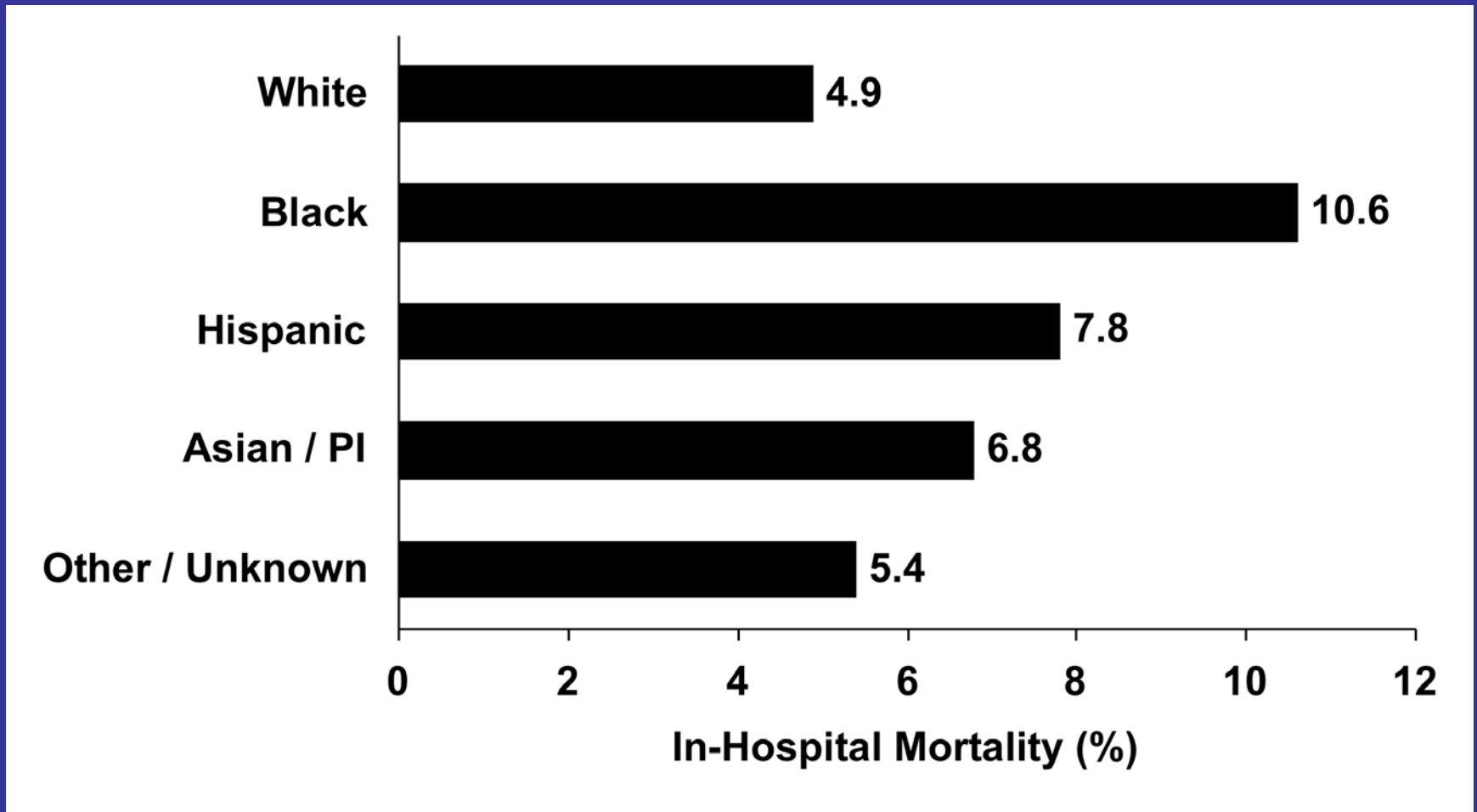


# Results: Race





# Results: Mortality by Race



# Results: Socioeconomics



	Total (n=3562)	White (n=2093)	Black (n=210)	P-Value
Age (mean)	58 yrs	59 yrs	53 yrs	<0.001
Female	49.2%	49.8%	52.3%	0.526
Non-elective	12.9%	12.3%	15.3%	0.248
Medicaid	5.2%	3.4%	12.7%	<0.001
Poor	19.4%	17.6%	39.4%	<0.001
Low-volume	8.4%	8.2%	13.1%	0.027

# Results: Comorbidities



	Total (n=3562)	White (n=2093)	Black (n=210)	P-Value
Cirrhosis	8.1%	6.0%	11.9%	<0.001
Hepatitis	8.0%	4.7%	14.7%	<0.001
Neoplasm	91.4%	93.0%	86.1%	<0.001
HB Cancer	26.1%	22.9%	29.3%	0.046
Charlson $\geq 1$	8.1%	6.3%	12.7%	0.026
Charlson $\geq 2$	2.2%	2.2%	1.7%	

# Multivariate Analysis of Mortality



Variable	Odds Ratio	95% CI	P-Value
White	1.00	—	Ref.
Black	2.15	1.28 – 3.61	0.004
Hispanic	1.48	0.78 – 2.82	0.230
Asian / PI	1.32	0.70 – 2.49	0.392
Other / unknown	1.15	0.78 – 1.71	0.473

# Impact of Clinical Factors



## Blacks vs. Whites

Subset	Odds Ratio	95% CI	P-Value
No cirrhosis	2.72	1.63 – 4.55	<0.001
No hepatitis	2.21	1.25 – 3.93	0.007
No cirrhosis/hepatitis	2.37	1.36 – 4.13	0.002
Charlson score 0	2.72	1.62 – 4.56	<0.001
Neoplasm only	1.98	1.08 – 3.66	0.028

# Impact of Hospital Factors



## Blacks vs. Whites

Subset	Odds Ratio	95% CI	P-Value
Low-volume	1.41	0.46 – 4.30	0.549
Mid-volume	3.01	1.06 – 8.56	0.039
High-volume	2.17	1.04 – 4.54	0.040
Hospital indicator	2.81	1.33 – 5.95	0.007

# Impact of Socioeconomics Blacks vs. Whites



Subset	Odds Ratio	95% CI	P-Value
Poor	1.71	0.48 – 6.12	0.411
Rich	1.44	0.35 – 5.98	0.618
Private insurance	2.16	0.99 – 4.72	0.054

# Complications & Resource Utilization



- No differences in acute liver failure, hepatic coma, or diagnostic radiology
- Blacks more likely to be transfused
  - 31.2% vs. 20.5%,  $P=0.001$
- Blacks died sooner than whites
  - 6.6 days vs. 15.9 days,  $P=0.006$

# Limitations



- **Comorbidity adjustment**
- **Severity of disease**
- **Extent of surgery**
- **Socioeconomic data**

# Conclusions



- Blacks have a higher adjusted risk of in-hospital mortality than whites after major hepatectomy.
- This disparity persists after adjustment for several clinical and hospital-level factors.
- This disparity may be partially explained by socioeconomic factors.

**DO DIFFERENCES IN HOSPITAL AND SURGEON QUALITY  
EXPLAIN RACIAL DISPARITIES IN LOWER EXTREMITY  
VASCULAR AMPUTATION?**

**REGENBOGEN ET AL ,  
HARVARD**

- **86,685 PTS**
- **65 and older**
- **AA pts more likely to get amputation  
45% vs 27%**
- **Odds Ratio: blacks 1.7 times more likely  
to receive amputation**
- **High volume centers: AA pts 1.8 times  
more likely to undergo amputation**

- **AA pts less likely to participate in Clinical trials**
- **Very little data on Hispanic pts and the disparities they experience**
- **Shortage of physicians to treat pts.**
- **This may only increase as we attempt to provide Universal care**

- **Define the problem carefully**
  - **Biologic difference vs Socioeconomic difference**
  - **Provider bias**
  - **Definition of Race as a biologic entity, a genetic entity or a social entity**
  - **Provider cultural competency**

- **Continue to increase participation in clinical trials**
  - **Broaden criteria safely**
  - **Funding should be dependent on efforts to include a minorities**
  
- **Training more minorities**
- **Encouraging participation in minority care**

# The Future of Cancer Care

