

# Severity Adjustment of Trauma Data

## By Dr. Millham

*Information is not knowledge,  
Knowledge is not wisdom,  
Wisdom is not Truth.*

Frank Zappa



# “I want people to work with the data”

David Clark 3/11/2007

- Simple question:
  - “Are outcomes in trauma affected by ‘race’?”
- Requires a risk adjusted comparison of mortality.
  - Also LOS? Discharge Status?
- How to do this?
- Can it be done with the NTDB?

# Severity Adjustment:

- Trauma:

- TRISS

- RTS

- ISS

GCS, RR, Pulse, SBP

- ICISS

- Other ICD9

Can do it. How powerful?

- Critical Care

- Apache

- SAPS, MPM

- MODs Score

- LODs, SOFA

Excellent models in ICU Pts

- Comorbidity

- Carleson index

Missing data problem

- Demographics

# Severity Adjustment the ACS Way

- NSQIP
  - A variety of clinical, historical, laboratory and contextual elements.
  - Constantly varying.

# Simplify the question

- Remove all DOA
- Look at GSW
- Remove Self-inflicted GSW
- Remove GSW to Head

# Mortality Prediction

## GSW

Univariate Regression				
Variable	OR	CI	c	HL
ISS	1.128	(1.125-1.131)	0.858	VP
RTS	0.391	(.384-.398)	0.91	P
TRISS	0.002	(.002-.002)	0.922	VP
ICISS	0.004	(.004-.004)	0.864	P
Log(ICISS)	1.118	(1.116-1.121)	0.839	VP
FSBP	0.97	(.969-971)	0.75	VP
	n	56,462		

# Logits for Mortality in GSW, referenced to Blacks

Paramter	OR	95% CI	p
ICISS	0.009	(.005-.015)	<.0001
AGE	1.015	(1.003-1.028)	0.0112
<b>FSBP</b>	<b>0.998</b>	<b>(0.953-0.959)</b>	<b>&lt;.0001</b>
FRR	0.998	(0.996-0.999)	0.0076
GCSM	0.983	(.0980-.0986)	<.0001
White	0.6282	(0.4241-0.987)	0.0424
Hispanic	1.587	(1.068-2.358)	0.0222
Asian	0.294	(0.27-3.239)	0.3172
n	13,798		
c	0.979		
H-L	13.7	p<0.087	

Paramter	OR	95% CI	p
ICISS	0.006	(0.004-0.011)	<.0001
AGE	1.018	(1.006-1.031)	0.0043
<b>BP&lt;40</b>	<b>254.6</b>	<b>(158.1-410.0)</b>	<b>&lt;.0001</b>
<b>BP 40-79</b>	<b>9.316</b>	<b>(4.870-17.822)</b>	<b>&lt;.0001</b>
BP 80-119	1.393	(0.739-2.623)	0.3052
BP>160	0.72	(0.213-2.436)	0.5969
FRR	0.998	(0.996-0.999)	0.0074
GCSM	0.982	(0.979-0.985)	<.0001
<b>White</b>	<b>0.671</b>	<b>(0.459-0.980)</b>	<b>0.0391</b>
<b>Hispanic</b>	<b>1.554</b>	<b>(1.039-2.325)</b>	<b>0.032</b>
Asian	0.0276	(0.024-3.160)	0.301
n	13,798		
c	0.982		
H-L	8.35	p<0.40	

How close is this to the Truth?