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# Firearm Injury in Detroit: Examining Seasonal Variability and Outcomes

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— School of Medicine —

**150 YEARS**  
IN THE HEART OF DETROIT

# Firearm Injury in Detroit: Examining Seasonal Variability and Outcomes

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# Background

- Firearm injuries contribute substantially each year to premature death, illness, and disability nationally.

## Hypotheses

- We anticipate poorer outcomes for firearm injury compared to other trauma
- When compared to all other trauma, firearm injury demonstrates seasonal variation with increased incidence in summer

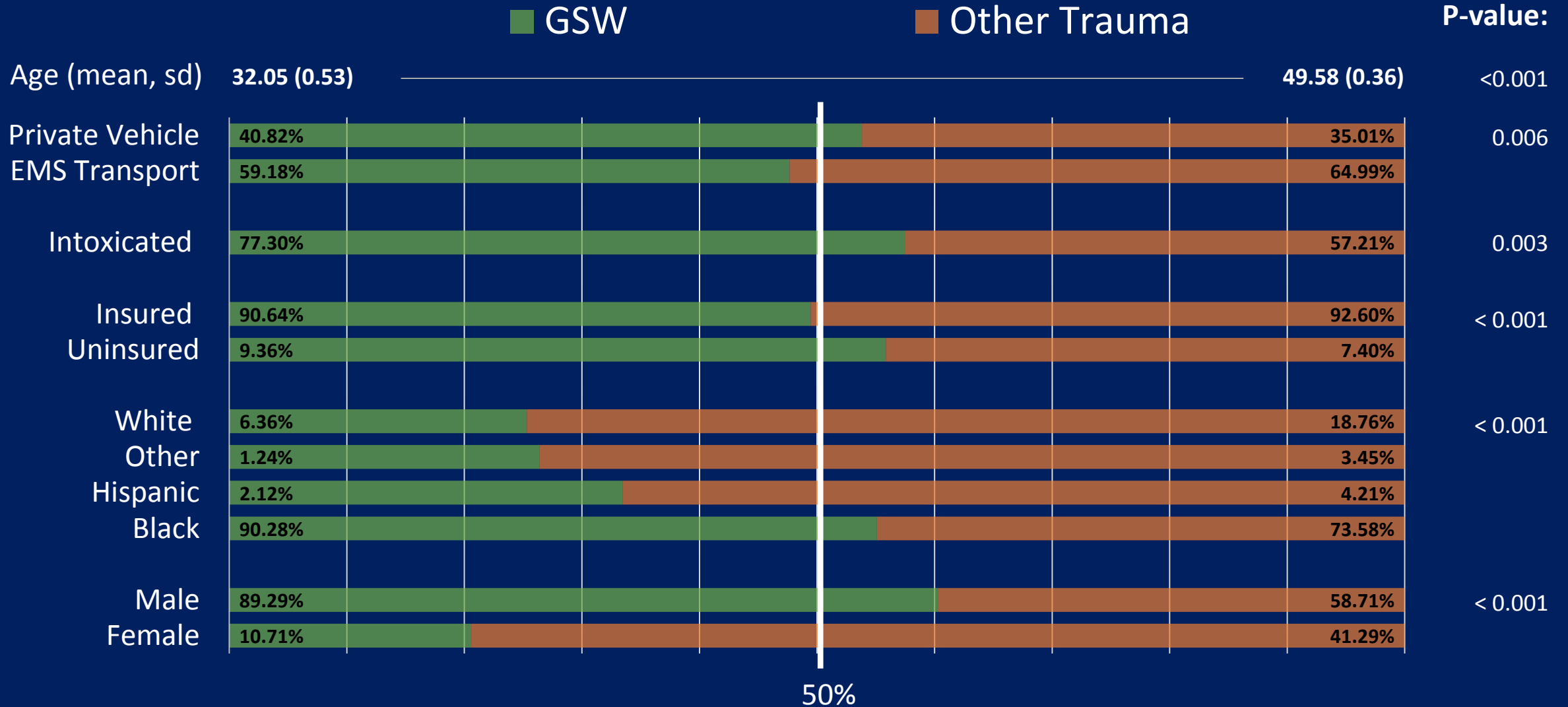


# Methods

- Academic Regional Level 1 Trauma Center in Detroit from 2013 – 2017
- Retrospective Study comparing patients sustaining firearm injury to all other traumas
  - Data retrieved from trauma registry & chart review
- Trauma patients enrolled (N= 5039, firearm injury 11.5%)
  - Included: Trauma patients admitted, died, or transferred out of hospital
  - Excluded: Patients transferred in from other locations
- Data Analysis:
  - Chi-squared and samples t-test,  $p < 0.01$



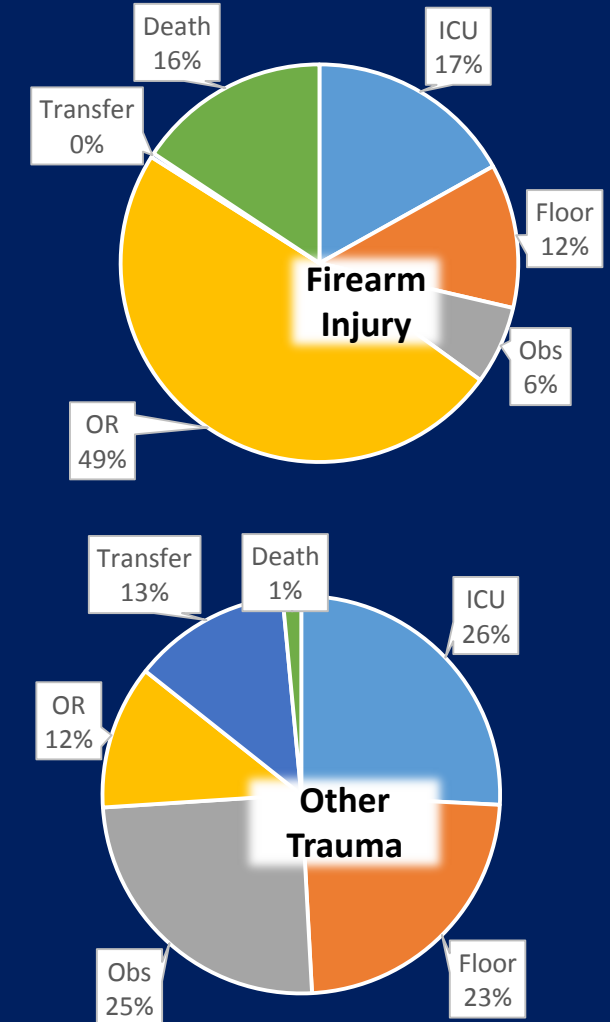
# Demographics



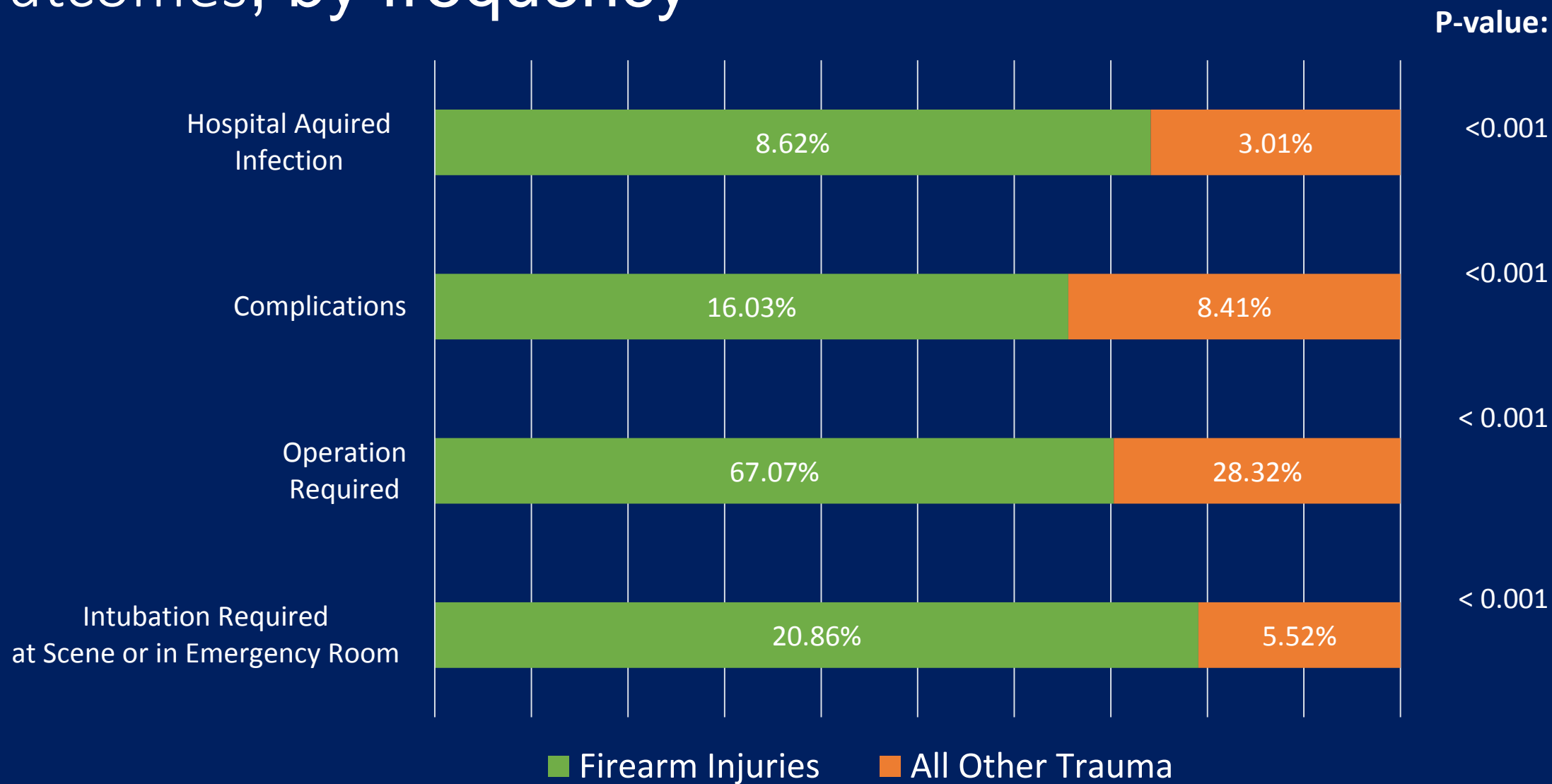
# Condition on Arrival

	All	Firearm Injury	Other Trauma	P-value
Injury Severity Score (mean)	7.54	<b>14.32</b>	6.66	< 0.001
<i>S.D.</i>	8.63	0.45	0.12	
<i>median</i>	5	10	4	
Glasgow Coma Scale (mean)	14.04	12.30	<b>14.30</b>	< 0.001
<i>S.D.</i>	2.87	0.21	0.04	
<i>median</i>	15	15	15	
Heart Rate (mean)	86.23	78.73	<b>87.13</b>	< 0.001
<i>S.D.</i>	28.04	1.67	0.38	
<i>median</i>	87	86	88	
Systolic Blood Pressure (mean)	132.89	100.93	<b>136.54</b>	< 0.001
<i>S.D.</i>	38.04	3.89	0.76	
<i>median</i>	136	118	138	

## Disposition from Emergency Room



# Outcomes, by frequency

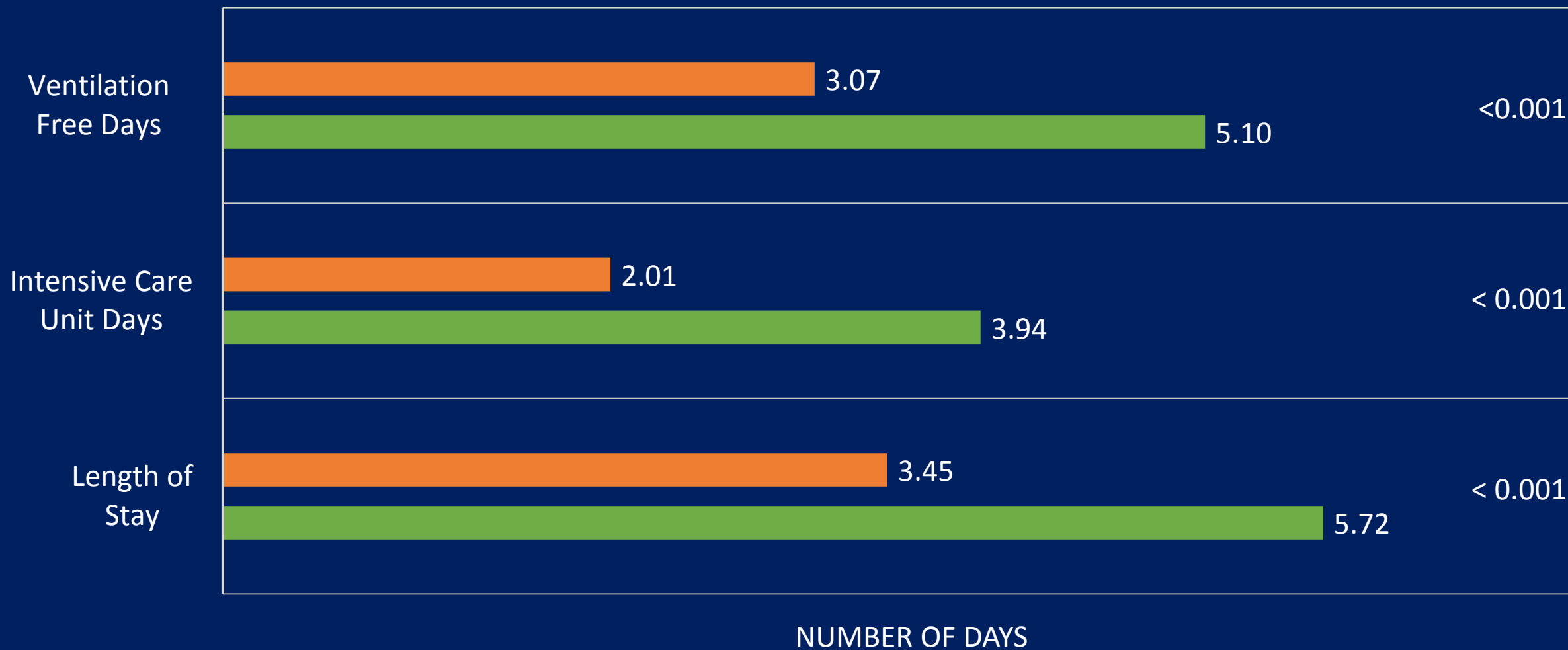


# Outcomes, by mean

■ All Other Traumas

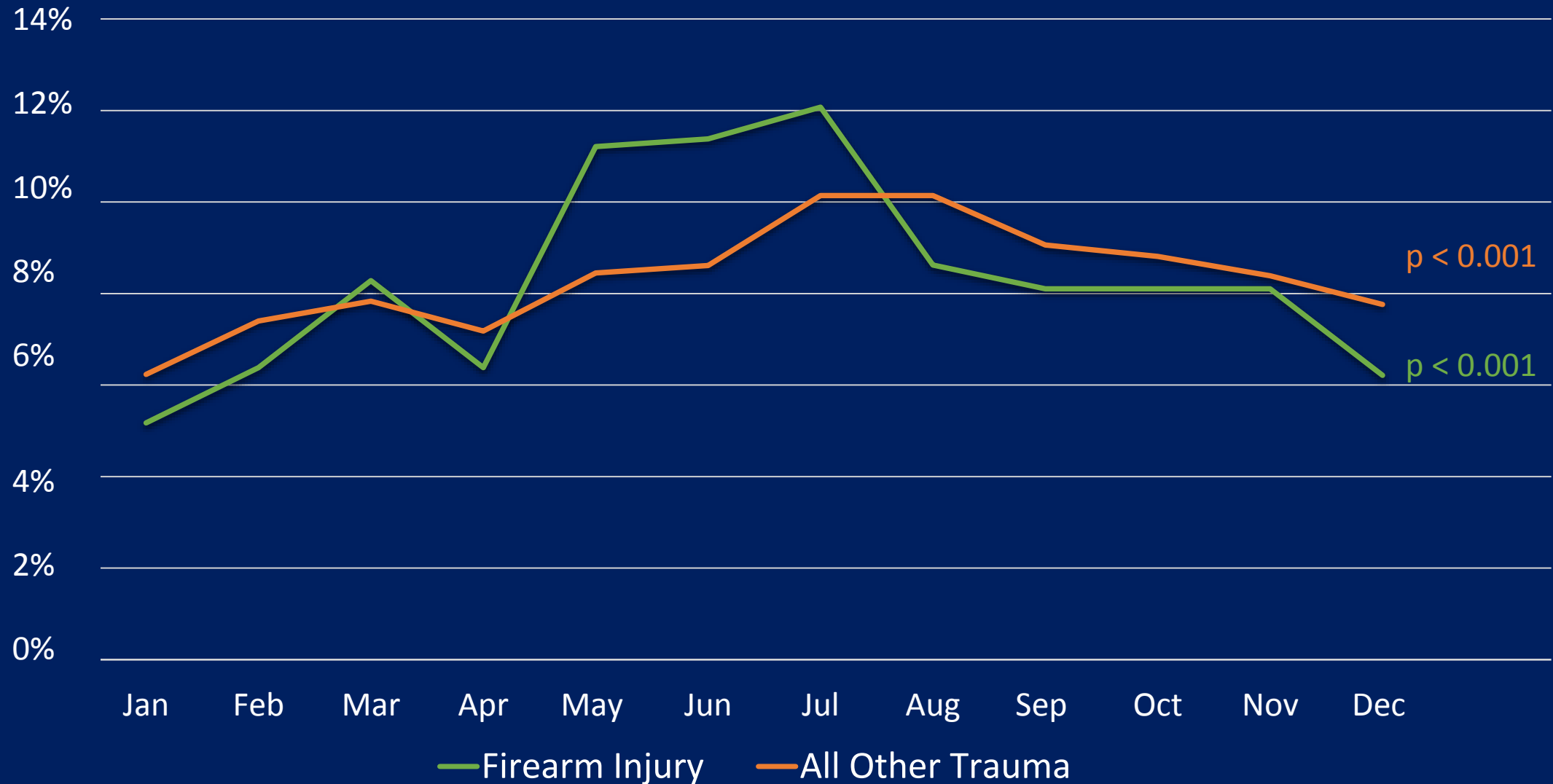
■ Firearm Injuries

P-value:





# Seasonal Variability, comparing Firearm and All other Trauma



# Summary

- Trauma admissions are higher overall in warmer months; however, the rise in firearm trauma was proportional to all other trauma
- Firearm injury has significantly worse outcomes in terms of hospital indicators and patient disability when compared to other trauma
- Firearm injury has higher:
  - Rates of intubation
  - Mortality
  - Days in ICU, Length of Stay, and Vent Free days
  - Complications including HAIs
  - Injury Severity Score
- Firearm injury has lower:
  - Likelihood to be discharged home without assistance
  - Glasgow coma scale
  - Heart Rate
  - Systolic Blood pressure



# Implications

- Better allocate resources
- Prevent injury
- Improve overall patient care
- Identify effective solutions to achieve measurable improvements in firearm injury outcomes

