

Introduction

The Glasgow Coma Scale (GCS) is the standard tool for assessing consciousness in traumatic brain injury (TBI). It evaluates **eye opening**, **motor response**, and **verbal response** and is endorsed by the **American College of Surgeons** and the **Brain Trauma Foundation**. GCS scores guide decision-making and predict outcomes such as mortality, disability, and coma duration.

However, many clinical factors can **confound GCS scores**—including sedation, intubation, intoxication, seizures, electrolyte and temperature abnormalities, pre-existing neurologic/psychiatric conditions, and injuries affecting eyes, face, or extremities—potentially leading to artificially low scores. Despite these limitations, GCS remains the primary assessment measure.

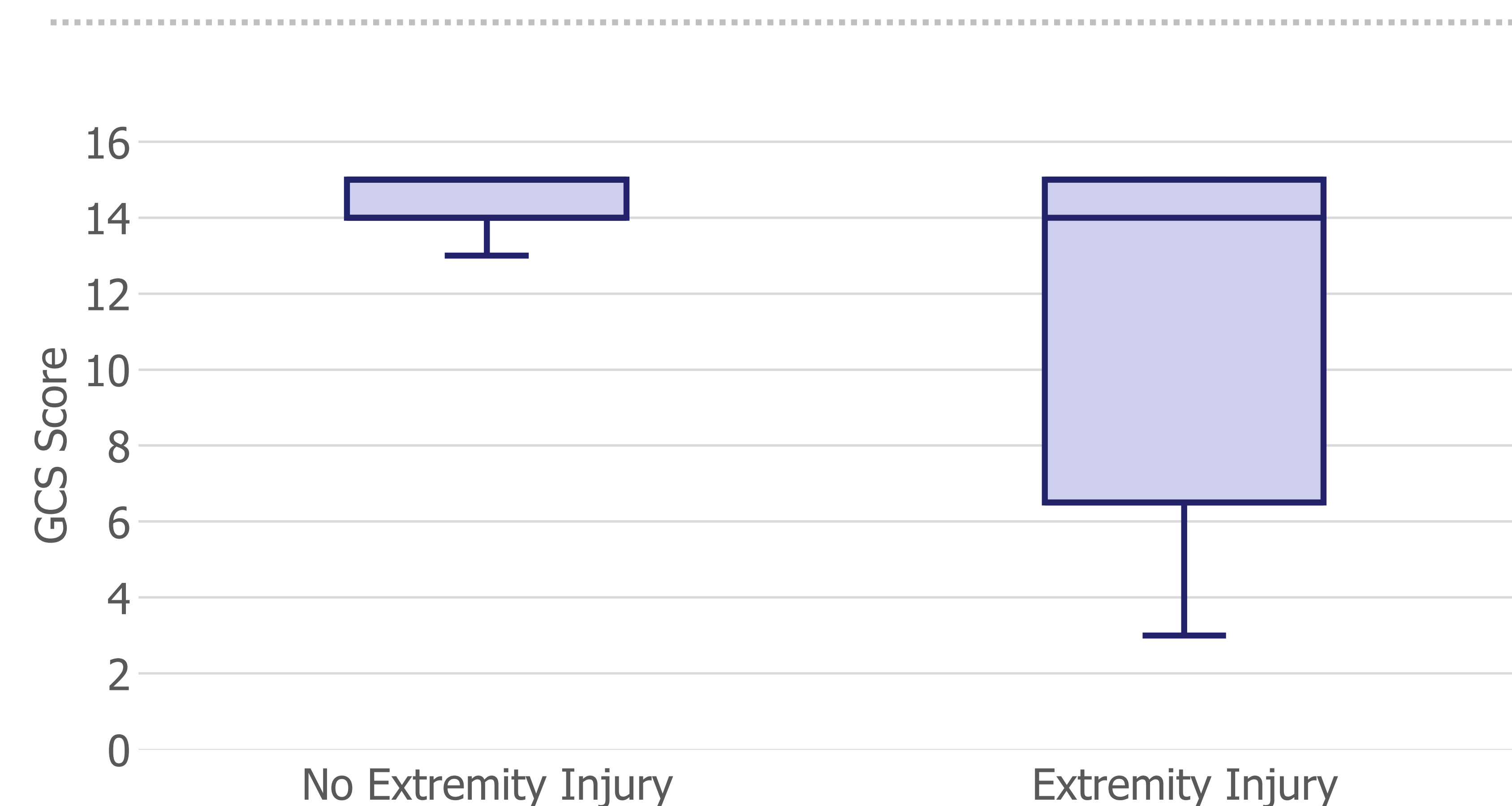
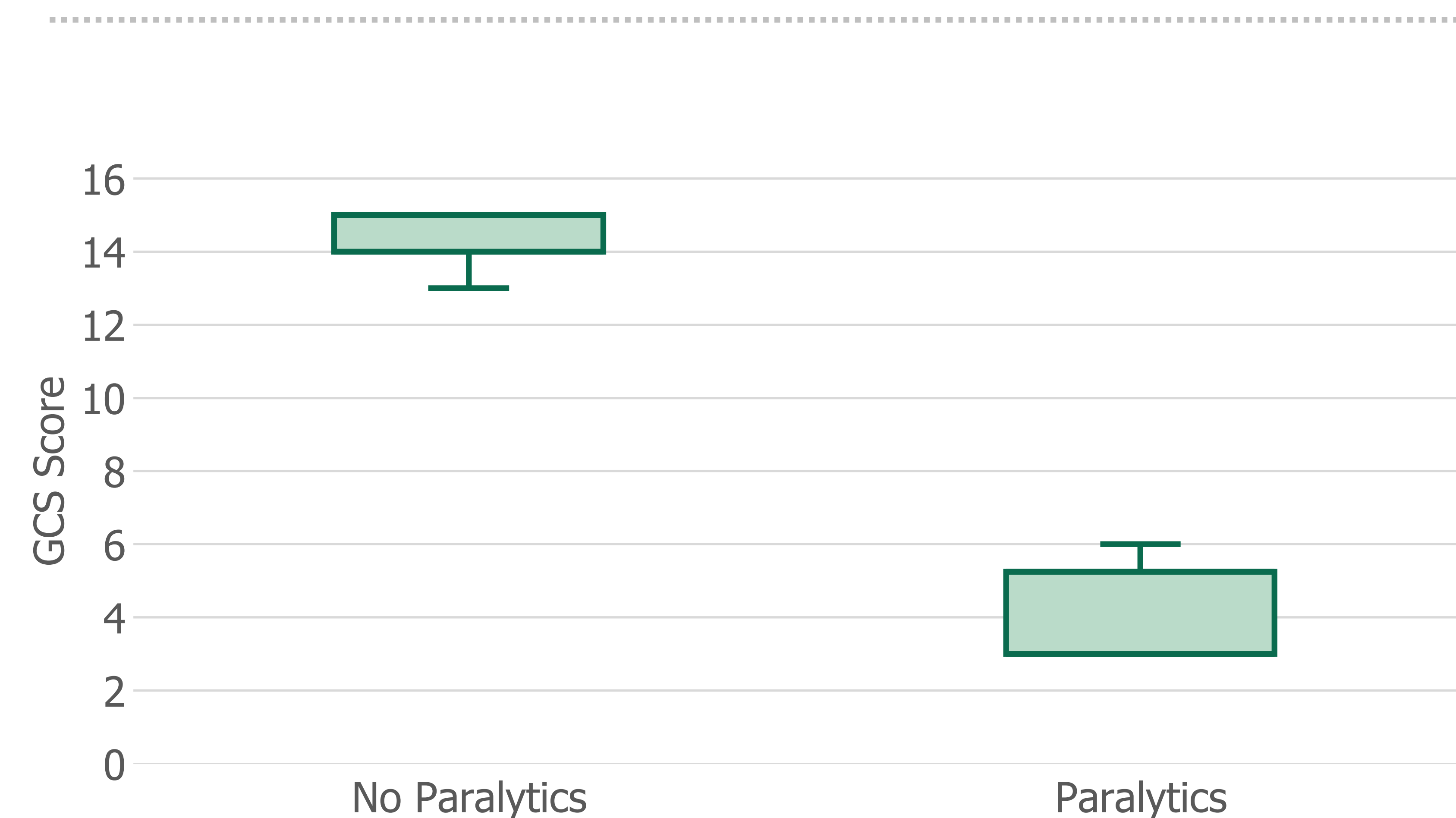
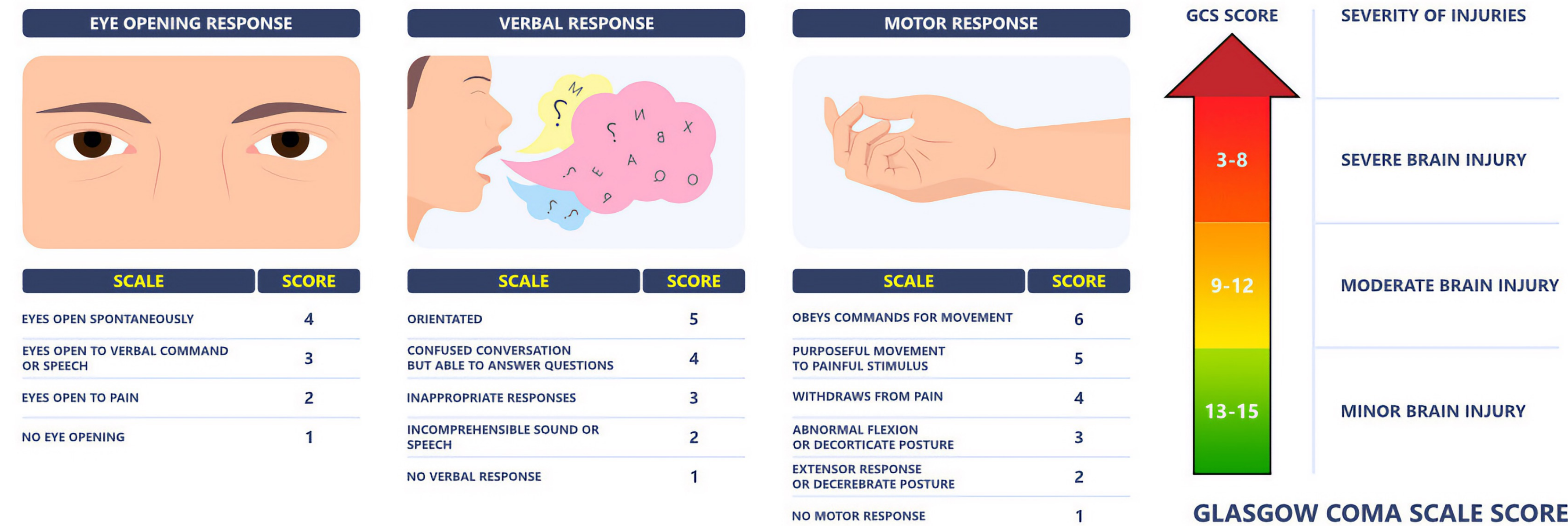
Objectives & Aims

- **Goal:** Describe prevalence and impact of confounders affecting GCS in TBI patients at a Level 1 urban trauma center
- **Aim 1:** Quantify prevalence of confounders for motor, eye, and verbal components of GCS
- **Aim 2:** Assess whether GCS scores differ systematically with confounder presence
- **Aim 3:** Identify which factors most strongly impact GCS

Methods

- **Design:** Retrospective cohort study
- **Setting:** Saint Francis Hospital, Jan 1, 2022 – Jan 1, 2023
- **Inclusion:** Adults (18–105), TBI diagnosis, GCS recorded within 12h, neurosurgery consult note
- **Exclusion:** <18 or >105, non-TBI, pregnant/incarcerated, missing key data, DOA
- **Data:** Trauma Registry + EMR
- **Analysis:** Descriptive statistics + Mann-Whitney U / Kruskal-Wallis

GLASGOW COMA SCALE



Preliminary Results

Sample: 178 TBI patients

- Mean age: 65.8 (range 18–100)
- Male: 60.7%
- White: 70.2%; Non-Hispanic: 89.9%
- Insurance: Medicare 58.4%, Medicaid 19.7%, Private 12.4%

Confounder Prevalence:

- Extremity injury: 38.2%
- Facial trauma: 47.8%
- Paralytic use: 5.6%
- Sedation: 5.6%

Admission GCS distribution:

- GCS 14–15: 63.5%
- GCS 3: 9.6%

Significant Associations (lower GCS):

- Paralytic use ($p < 0.001$)
- Sedation ($p < 0.001$)
- Extremity injury ($p = 0.001$)
- Race ($p = 0.03$)
- Insurance type ($p < 0.001$)

Not Significant:

- Facial trauma ($p = 0.14$)
- Ethnicity ($p = 0.65$)

Conclusions

- Sedation, paralytic use, and certain injury patterns significantly confound admission GCS scores
- Results emphasize the need for careful interpretation of GCS in patients with these factors
- Multivariate analysis is ongoing to determine independent effects

References & Links

