

Summer Student Research Program Project Description

FACULTY SPONSOR'S NAME AND DEGREE: *Joanelle Bailey, MD, MPH, FACS*

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PROJECT TITLE (200 Characters max):

Development of a Trauma Chronic Stress Burden (TCSB) Score Using Single-Center Trauma Registry Data

HYPOTHESIS:

We hypothesize that a composite Trauma Chronic Stress Burden (TCSB) Score derived from clinical and social risk factors documented in the trauma registry and electronic health record will be independently associated with adverse trauma outcomes beyond traditional injury severity measures.

PROJECT DESCRIPTION (Include design, methodology, data collection, techniques, data analysis to be employed and evaluation and interpretation methodology)

This project is a retrospective single-center cohort study using trauma registry and electronic health record (EHR) data from patients treated at the Eric Muñoz Trauma Center at University Hospital.

Study Design:

Retrospective chart review of adult trauma patients (≥ 18 years) treated between January 2021 and December 2025.

Methodology & Data Collection:

Data will be obtained from the institutional trauma registry and supplemented with structured EHR chart review when necessary.

Variables will include:

- *Demographics (age, sex, race/ethnicity, insurance status)*
- *Injury characteristics (mechanism of injury, ISS, GCS)*
- *Comorbid conditions (diabetes, hypertension, renal disease, COPD, cardiovascular disease)*
- *Laboratory markers available at admission (e.g., albumin)*
- *Mental health and substance use diagnoses (via ICD-10 codes)*
- *Polypharmacy (≥ 5 outpatient medications)*
- *Documented social drivers of health (e.g., housing instability, insurance status)*

Primary outcomes will include:

- *In-hospital mortality*
- *ICU length of stay*
- *Total hospital length of stay*
- *Major in-hospital complications*

The student will assist with:

- *Literature review and background research*
- *Trauma registry data extraction (with supervision)*
- *Structured chart abstraction*
- *Data cleaning and coding*
- *Data entry into REDCap*
- *Preliminary descriptive analyses*

Data Analysis:

- *Creation of a composite TCSB Score using selected clinical and social variables*
- *Descriptive statistics to characterize the cohort*
- *Multivariable logistic regression (for mortality and complications)*
- *Linear regression (for length of stay outcomes)*

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- *Model comparison to assess whether the TCSB Score improves outcome prediction beyond ISS alone*

Results will be interpreted in the context of structural and clinical contributors to trauma recovery.

SPONSOR'S MOST RECENT PUBLICATIONS RELEVANT TO THIS RESEARCH:

Bailey JA, Glass NE, Berry C. Housing as a Health Intervention – Structural Vulnerability in Trauma. JAMA Surgery. December 3, 2025.

Bailey JA, Gore AV, Berry C. Rewriting The Rules Of The Road By Embedding Equity In Prehospital Trauma Care. JAMA Surgery. November 5, 2025.

Bailey JA. Beyond Neutrality: Reframing the Trauma Surgeon's Ethical Mandate Toward Justice. J Am Coll Surg. September 12, 2025

Sampson A, Pesante J, Bailey JA. Addressing Racism as a Driver of Racial Disparities in Surgical Literature: A Scoping Review. American Journal of Surgery. 2025.

Honor MA, Blank JJ, Hatchimonji JS, Bailey JA, et al. Higher center volume is significantly associated with lower mortality in trauma patients with shock. Injury. 2023.

Bailey JA, Jacovides CL, Butler D, et al. Adolescent Gun Violence Shows an Age Group to Focus Trauma Prevention. Journal of Surgical Research. 2023.

THIS PROJECT IS: **Clinical** **Laboratory** **Behavioral** **Other**

THIS PROJECT IS CANCER-RELATED

Please explain Cancer relevance

THIS PROJECT IS HEART, LUNG & BLOOD- RELATED

Please explain Heart, Lung, Blood relevance

THIS PROJECT INVOLVE RADIOISOTOPES?

THIS PROJECT INVOLVES THE USE OF ANIMALS

PENDING **APPROVED** **IACUC PROTOCOL #**

THIS PROJECT INVOLVES THE USE OF HUMAN SUBJECTS?

PENDING **APPROVED** **IRB PROTOCOL # M**

THIS PROJECT IS SUITABLE FOR:

UNDERGRADUATE STUDENTS **ENTERING FRESHMAN**
SOPHOMORES **ALL STUDENTS**

THIS PROJECT IS WORK-STUDY: **Yes** **or** **No**

THIS PROJECT WILL BE POSTED DURING ACADEMIC YEAR

FOR INTERESTED VOLUNTEERS: **Yes** **or** **No**

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WHAT WILL THE STUDENT LEARN FROM THIS EXPERIENCE?

The student will gain practical experience in clinical research design, trauma registry methodology, structured chart review, and introductory statistical analysis. They will learn how to operationalize social and clinical risk factors into measurable research variables and how these factors relate to trauma outcomes. The student will receive mentorship in scientific writing and abstract development and will have the opportunity to contribute to a manuscript submission.